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B. BURGESS, Captain,
Secretary.

Whitehall Yard,
May, 1885.

The Journal
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MILITARY PRIZE ESSAY.

SHOULD THE EUROPEAN ARMY IN INDIA CONTINUE AS AT PRESENT CONSTITUTED, OR SHOULD IT BE CONVERTED IN WHOLE OR IN PART INTO A LOCAL FORCE?

By Captain G. F. BROWNE, Northamptonshire Regiment, Deputy Assistant Adjutant and Quartermaster-General, Headquarters, Ireland.

"Incidit in Scyllam qui vult vitare Charybdim."

IN dealing with the question of a local army for service in India as opposed to the plan which exists at present, it is intended to limit the inquiry in the first instance to the consideration of the two systems in the ordinary acceptation of their meaning, that is to say, the local troops will be supposed to have their headquarters permanently stationed in India, the men will be enlisted for service in that country, and the Officers will belong to the local force, the relief of the battalions being carried out by annual drafts only, instead of as at present by yearly drafts and relief of battalions.

It is desirable to take this course, as there are so many schemes for the organization of a local army in India. Some would localize the colours of the regiment only, the men and Officers remaining as regards their conditions of service exactly as at present, others would prefer the men but not the Officers being engaged for service in India, others again would only localize a portion of the Army to act as a garrison, the remainder being supplied as at present.

Were all these schemes to be examined separately before some general preliminary inquiry were made, it would entail going repeatedly over the same ground, and in a mass of detail the difficulty of grasping the peculiar advantages and disadvantages of each system would be greatly increased. For this reason an endeavour will be made to treat the subject in such a manner as to bring the salient points into contrast, leaving the many modifications for after consideration.

It conducting this inquiry it will of course be necessary to consider both systems worked under the same conditions as regards length of service, for it would be manifestly unjust to compare the system of reliefs combined with short service[1] with the local system worked with long service, just as it would be to pit the local system and short service against the relief system with long. Nor must it be forgotten that only three years ago the service demanded of a man with the colours was lengthened from six to seven, or practically to eight years, as the soldier is obliged if his Army service expires while he is stationed abroad to put in an additional year with the colours, and as the benefit of this change will not make itself felt for several years, it affords another argument against deciding on the relative merits of the two systems by comparing the Army in its present transition state with a long service local army.

Without wishing in the slightest degree to prejudice the case against the local army, we would protest against the exclusively Indian point of view from which this question is so often considered. Local interests too often assume exaggerated proportions from a local point of view. The welfare of Great Britain must be studied as well as the welfare of India, and the fact that she is a part, undoubtedly important, but still only a part of the British Empire, must not be overlooked. Far from the question of the reorganization of the European Army in India being a purely military problem, it is a constitutional, national, and political one, involving issues far more important than those that appear at first sight on the surface.

It has been urged that as India pays for the training of her soldiers, she thereby gains a right to insist on obtaining an army best suited to her requirements without reference to its effect on Great Britain, but this principle cannot be allowed to pass unchallenged, for the interests of the Empire at large must be considered before those of any particular part, however important it may be. She has, on the other hand, a just right to demand that the troops sent her should be as perfect as possible in physique and discipline, for it is a fact of the highest political importance that our men should not compare unfavourably in physique and endurance with the native troops among which they may be thrown.

It is perhaps fortunate, seeing how prone we are to blindly follow the Continental model, that in considering the organization of our Army in the East, reliance can alone be placed on the experience gained in India. No parallel exists in the history of the world to a small country such as Great Britain ruling an empire many times its size, and with eight times its population, at a quarter of the circumference of the globe distant from it.

Algeria is not one-tenth the size of India, and is almost within hail of the French shores. It is garrisoned by about 28,000 French troops and 13,300 natives and foreigners.

The purely French force consists of four regiments of Zouaves, up-

[1] By short service is here meant six or seven years with the colours, and by long nine or twelve years.

wards of 10,000 strong, 3,600 Chasseurs-à-pied, 2,000 artillery, and 3,600 cavalry. The men belonging to these regiments are five-year volunteers specially engaged for the Colony, and are allowed to prolong their service for not less than two or more than five years, up to the age of twenty-nine.

The remaining French troops consist of three battalions of African Light Infantry and five companies of discipline, both recruited from men who, for a purely military offence, have been sentenced to over six months' imprisonment.

The Foreign Legion, numbering 2,500 men, is composed of Europeans of all nations who voluntarily enlist for five years. Both this Legion and the battalions composed of men who have been imprisoned, are institutions quite at variance with our ideas, and, if introduced into India, would obviously become a source of danger.

Of native troops there are 8,500 Turcos and 2,500 Spahis. Thus the purely French troops are to the native as two to one, a proportion which is reversed in India.

But there is little to be gained by examining the French system in detail, for the proximity of Algeria to France permits of conditions of service which would be quite inapplicable to India. Another reason why it is not necessary to pursue this inquiry is, that the War Minister of France[1] has just drafted a Bill for the creation of a Colonial Army, of which unfortunately the outline only can be obtained at present. The interesting part as regards this essay is that the men are to be obtained by voluntary enlistment, drafts from the annual contingent being only resorted to when the former fails to produce the required numbers.

A bounty of 10*l.* will be given on enlistment, and if a man elects to prolong his service to a second term, he will receive an annual increase of pay ranging from 4*l.* to 6*l.*, and at the end of fifteen years' service he will be entitled to a pension.

The troops in the African Colony will remain much as at present, but it is proposed to raise eight regiments of twenty companies each, for service in the Colonies other than Algeria.

Twelve companies in each regiment are to remain in France to form a reserve for expeditions, which companies it is intended to reinforce by drawing on Algeria for drafts. In fact, France seems to be about to make Algeria her base as regards men for colonial enterprise, just as India is our base for all warlike operations in the East.

Nor does Russia come to our assistance. No sea separates her from her Asiatic possessions. The arid wastes of Central Asia are but sparsely populated, and while curiously enough the area is roughly the same as that of British India, that is to say, about one and a-half million of square miles, the population is only about one-eightieth part as dense. The distances are too great and the inhabitants too few to cause any uneasiness to Russia, and her troops need not therefore be in such a high state of efficiency as it is necessary to keep ours in, in India. There are no semi-independent monarchs with large armies at their disposal in her midst, as we have in

[1] The War Minister resigned shortly after this was written.

India, for the Khan of Khiva and the Emir of Bokhara have happily ceased, except in name, to exercise sovereign rights, and exist with a semblance of power only so long as they obey the bidding of the Czar of All the Russias. Nor is there the hard and fast line of race which exists in India between the conquerors and conquered, for many are of the same creed, and, being semi-Asiatics, form a connecting link between the pure Russian and the natives of the country.

No bond of union of this kind is to be found in India; there is no assimilation there between races. The gulf between ourselves and the native is as deep and broad as it was in the days of Clive. "The truth," wrote Sir H. Durand, "is seldom grasped. that we have struck no root, and are only on the surface of the Empire, the only certain and permanent source of power and influence being the military hold of the country." This is as true to-day as it was when written nearly twenty-five years ago, and it certainly behoves us to jealously watch the permanent source of power that it be not allowed to diminish in the slightest degree, if we are to continue to administer that vast country for the welfare of its inhabitants, and for the benefit of all civilized nations.

As constant reference will be made throughout this paper to the local army of the old East India Company, and, indeed, to the garrisoning generally of India before the Mutiny, it will not be out of place to give a sketch of the system, entering into some detail as regards the recruiting of the local force, its health and its discipline.

The complicated structure which upheld the British power in India up to the days of the Mutiny was the growth of a century of conquests. Constant wars and constant increase of territory led to its gradual augmentation. In 1754 it consisted of the 39th Regiment of the Line, and a small force of local troops, with which Clive won the famous battle of Plassey. In 1758, three more line regiments were sent to Madras to press the war against France. At the conclusion of peace these regiments returned to England, the British Army at home was reduced to seventy regiments, and India remained without any Royal troops for some years.

Shortly after this, however, Royal troops were again despatched to India, and on Lord Cornwallis' arrival in 1786, the establishment of line troops consisted of one regiment of dragoons, and five battalions of infantry, with a small local force of six weak battalions.

"The Army administration of this period," writes Chesney,[1] "partook of the general laxity and disorder which up to that time had pervaded every branch of the Company's government in India. The major part of the Officers' emoluments being derived from irregular perquisites, while, as to the superior morale and discipline of the early Company's army, the history of those days records a succession of mutinies in which the black and white troops were alternately employed to coerce each other, and the latter were composed of the scourings of almost every European nation, kidnapped or wheedled on

[1] From "Indian Polity," by Colonel C. Chesney.

board ship by crimps, for the Company's recruiting depôt was not established till 1787. . . . . The redeeming feature of the troops of all classes was the gallantry and endurance exhibited in the numerous campaigns and protracted expeditions in which they were engaged." Lord Cornwallis is even more severe in his description of the local army. After depicting to what a very low ebb recruiting had fallen owing to home jealousies he adds, "they are such miserable wretches I should be ashamed to acknowledge them for countrymen."

In 1779 five regiments of the line were raised and despatched to Madras to take part in the war against Hyder Ali. Nine years later four more regiments were raised and sent to India, so that the Royal troops were represented at that time by nine battalions of infantry and one regiment of dragoons.

On Lord Wellesley's arrival in India in 1798 the British troops were further strengthened, but the Company's European infantry, "which had always been far below its numerical strength," was reduced to one regiment per Presidency.

At the termination of the Mahratta War, in 1808, the European establishment in India was reduced to a peace footing as follows:—

	Cavalry.	Infantry.	Artillery.
British troops....	4 regts.	20 battns.	—
Company's troops.	—	3 ,,	6 batteries.

In all about 24,500 Europeans.

In 1840 the Company added a second regiment to its army in each Presidency, and in 1854 a third.

Prior to the year 1853 the maximum number of European troops to be kept up by the Company was restricted by law to 12,000 in India and 2,000 at the recruiting depôt at home, but in that year this number was increased to 20,000 in India and 4,000 at home.

At the outbreak of the Sepoy Mutiny the numerical strength of the British Army on the Indian establishment, and of the East India Company's Army, was as follows:—

	Royal Troops.		E.I. Co.'s Troops (Europeans).	
	Regiments.	Total all ranks.	Regiments or Brigades.	Total all ranks.
Cavalry.....	4	2,686	..	..
Artillery.....	..	..	5 Horse Art. (brigades) 12 Foot Art. (battalions)	2,148 4,621
Infantry.....	22	21,577	9	8,438
Total.....	..	24,263	..	15,207

These numbers include the regiments which had returned from Persia in May, 1857.

The cavalry, as will be seen from the above table, was exclusively composed of Queen's regiments, and the artillery exclusively of Company's artillery, the entire strength of the two armies being in the proportion of about 8 to 5.

During the Mutiny the Queen's Army was brought up to 87,000 men, and the local army considerably increased till it stood at 24,685 men, this being the largest European force the Company ever had at its disposal.

This large addition to the local army was absorbed by the creation of three new infantry battalions and five cavalry regiments, but the men forming these regiments were untrained recruits, and as a matter of fact the regiments were never efficient, and were, with the exception of three cavalry regiments, disbanded.

On September 1, 1858, the East India Company ceased to exist, and the political and territorial powers hitherto exercised by it passed to the Crown, and with them the local army.

It will be necessary further on to inquire into the causes of the so-called "White Mutiny" among the local troops; suffice it here to say that the rumours of amalgamation with the Queen's Army caused great discontent amongst the men composing the local army, which culminated in the exodus of upwards of 12,000 men from its ranks, while the remainder, also numbering some 12,000, of which more than half were cavalry and artillery, were in April, 1861, finally amalgamated into the British Service.

There is no manner of doubt that before the Mutiny the European Army in India was one huge anomaly. Not only were the Queen's and Company's troops distinct in organization, serving under different rules and regulations and with a separate Staff, but the Company's troops themselves differed in the three Presidencies. For example, in the Bombay artillery there were no drivers, this duty being performed by the gunners, and the shaft was used in this Presidency, while the pole was used in Bengal. But, notwithstanding these anomalies, which were all productive of irresponsibility and indiscipline, it must be conceded that the Indian Army did the work it was called on to perform very well, especially when fighting was required of it, for anomalies frequently work very well in practice, however much they may fail in theory.

Before criticizing the working, however, it will be necessary to enter more fully into the details connected with the raising of the local army. It was officered by Cadets nominated by the Directors. The system of promotion was by seniority, and theoretically without purchase, but practically the juniors subscribed a sum of money to a senior Officer on retirement varying from 1,200*l.* for a Captain low down on the list to 3,000*l.* for a Major.

The rules of full pay retirement were very liberal; Officers were entitled to retire on the full pay pension of their rank after twenty-two years' service. They were also granted long furloughs on full pay, and if ill health rendered them unable to return to India, they were granted half-pay pensions.

The Company had its own recruiting stations at London, Liver-

pool, Cork, Glasgow, Bristol, and Belfast, to which York was added during the Mutiny. Each station was under a Company's recruiting Officer, assisted by a working staff of six sergeants.

The recruits enlisted for artillery or infantry without reference to particular regiments or Presidencies, and were drafted to corps as required. Married men were allowed to enlist at the rate of 6 per cent. All recruits were at once sent to the depôt at Warley, where there was accommodation for 1,200 men, and thence embarked for India. Before the Mutiny the recruits were generally four to five months at the depôt, but during the rebellion they were sent out as soon as a sufficiently large number was obtained to make it worth while to engage a ship for their conveyance. Pensioners were sent out in charge of the drafts, the best men of which were selected to act during the voyage as non-commissioned officers, and it speaks well for the stamp of men obtained that no record can be traced of their misbehaviour on board ship, though the men were little more than raw recruits, and in charge of old pensioner sergeants. The bounty given on enlistment increased or diminished according to the existing scale for the line; the terms of service were for ten years, to be extended to twelve if required, with the right to re-engage to complete twenty-one years' service. A modified pension was granted after fourteen years' service, but in the six years antecedent to 1857 the average period of service of men admitted to pension was fifteen years ten and a half months. In his attestation the recruit took exactly the same oath of allegiance to the Sovereign as was required for troops of the regular Army, with an additional paragraph, in which he engaged to serve the Company. It is generally admitted that the class enlisting in the Company's service was superior to that which entered the line, except when large numbers were obtained during the Mutiny, when it fell to the ordinary line standard. All the men of the local service took their discharge in India, and were sent home as civilians, and once a man was invalided to England he never served again.

There is a very common opinion abroad in the Army that the East India Company never experienced any difficulty in obtaining the requisite number of recruits, and it is only fair to allow that though there are to a certain extent grounds for this belief, there are at the same time several important points to note in connection with the conditions under which the recruits were obtained, to which due weight must be given before drawing any general deductions in favour of a local service attracting men in the present day as it did formerly.

The accompanying Return[1] has been compiled from several documents, all of which, with the exception of that showing the number of recruits raised in Great Britain and Ireland, emanated from the East India House. That it is approximately correct a casual inspection will show. Take, for instance, the number of men enlisted during the eight years from 1851 to 1858, and it will be found that it agrees very nearly with the number despatched to India during the same

[1] Table I, page 333.

period, the difference being just what might be expected to arise by casualties from desertion and sickness.

Perhaps the most striking feature of the whole Return is the smallness of the force of local troops. It scarcely amounts to one-fourth the strength of the line army now holding India. The number of recruits consequently required annually was comparatively small, and as the conditions of service were special, it is not surprising that there were more applicants for enlistment than there were vacancies. In the four years preceding the Crimean War the Company's recruiting Officers enlisted only 1,380 a year. During that war, though the local army was nominally increased by three battalions, and though all restrictions were removed and the bounty raised to 8*l*., it was found impossible to bring the army up to its establishment. It will be seen from the Return that at the end of 1855 it was only 519 men stronger than at the end of 1853. Between the Crimean War and the Mutiny recruiting was again restricted, and even suspended during October and November of 1856, probably from motives of economy, as the army was at the end of that year upwards of 1,500 men below its establishment.

In 1857 and 1858, when all restrictions were again withdrawn, 10,312 men were enlisted, but two-thirds of this number were raised at a standard height of 5 feet for cavalry and 5 feet 3 inches for infantry; during the same period, and under the same conditions as regards bounty and standard of height, 65,334 men were enlisted for the British Army.

It is not, however, pretended that these few figures prove much beyond pointing to the fact that the Company had no difficulty in keeping a small force of under 14,000 at its full establishment, and that the failure which attended its efforts to increase its strength justifies us in receiving the accounts of the great popularity of the local service with a certain amount of caution.

Probably the great incentive to recruiting was the virtual monopoly of minor appointments which belonged to the local army. As long as the Court of Directors existed, the subordinate offices in the Commissariat and other Departments were entirely filled by selection of men and non-commissioned officers from the Company's European troops. The popularity, therefore, of the Company's army amongst the better class of recruits rested on a solid basis by offering a good opening to a steady man to better himself, and to a man of superior education to regain a position he had perhaps lost at home. He got out of England quickly and with one-twentieth part of the drudgery which the ordinary line recruit was obliged to undergo. It is exceedingly doubtful whether, were a Local Army again raised for service in India, it would regain the popularity the old Company's army enjoyed. It certainly would require to hold out some inducement to recruits beyond the privilege of always serving in India, and yet the subordinate appointments which used to be filled by selection from a small force of 13,000 to 14,000 men are now filled by selection from over four times that number, and never again can these offices become exclusively the monopoly of one section of the Army. Unfortunately, too, for the

British soldier the present policy is to employ natives in all subordinate offices.

There are doubtless a number of men who would prefer to serve in India, and others whom it would suit better to serve at home, but the evidence given before the Army Reorganization Committee in 1881 tends to show that the mass of men enlist without any particular preference for one regiment more than for another. "It is only when a man presents himself to a recruiter, who informs him what corps are open for recruits, that he decides."

If Recruiters for the Local Army offer inducements so must the recruiters for the Line, and then the pleasing spectacle is afforded of two armies competing for recruits in the same market, which puts the State much in the position of a man who wanting a horse sends two friends to bid against each other for it at a sale.

But, to go further, it is certain that one Service would after a time become more popular than the other, and the result would then be, supposing the Local Army to become the favourite, that it would obtain the pick of the recruits, while the inferior residuum would fall to the line. This is what is stated to have occurred before the Mutiny.

It appears that the men passed by the Medical Officers of the line in the districts and sent to Warley were at times disapproved of by the Officers at the Indian Depôt and rejected on the ground of deficient muscular development, or for presenting traces of incipient disease, till overruled by a Horse Guards memorandum stringently prohibiting all rejections unless the recruit had contracted his defects subsequent to the first medical examination, or unless some very glaring defect had escaped the notice of the District Staff Surgeon.

Supposing, on the other hand, that the line, which can offer exactly the same attractions to a man choosing a regiment with one of its battalions in India, should prove to be more suited to the tastes of the recruit, then the weedy lads rejected by the line would fall to the local regiments. Nothing could be more unfortunate than this for India, and yet it is by no means an improbable contingency.

It is scarcely an argument in favour of the Local Army to instance the Marines, who carry on their recruiting side by side with recruiters for the line, for the corps is a small one of only 12,000 men, and many enter its ranks from a liking for a sea life, and from the advantage of being able to put by money at sea, who under no circumstances would enlist in the line.

Another point worthy of notice in reviewing the circumstances under which the Company recruited its army was the very large proportion of men required for the artillery and cavalry as compared to the number required for infantry.

Between the years 1851 and 1858, of the 18,300 men embarked for India, only one-half were drafted to the infantry. The Company's artillery received a higher rate of pay than the infantry, and compared with the artillery at home they had a comparatively easy time of it, as their stable work was performed by natives.

In short, when the exceptional conditions under which the Com-

pany raised its recruits are taken into consideration, both as regards the smallness of the force and the inducements it was in a position (which the Queen's Service was not) to hold out to eligible recruits, it would be unwise to count on obtaining the same results in the present day even for a small army, and it would be nothing less than folly to calculate on obtaining them for one nearly five times its strength.

Leaving the question of recruiting, we now pass to the consideration of the effect of the Indian climate on discipline. It is intended, in treating the much-vexed question as to how far service in India impairs the discipline of a regiment, to give extracts from the opinions of distinguished men experienced in India and its climate. These opinions, it will be seen, are frequently in direct antagonism, and so conflicting is the evidence that it would be incomprehensible how men could honestly hold such contrary views were not the key to the puzzle forthcoming in the fact that the Officers of the Queen's and Indian Army divided themselves into two hostile camps. The Officers of the former held that the local army was inferior in discipline to the Royal, while the Officers of the Indian Service considered that it was fully equal to the line in all respects.

In commencing with the opinions of those on the Indian side, we cannot do better than by beginning with Sir J. Outram's testimony. "Were an appeal now made," wrote this distinguished soldier in 1859, "to the whole of the Royal regiments that served with Lord Clyde, they would with one voice declare that the 1st Bengal Fusiliers and the 1st Madras Fusiliers were in no single respect inferior to the most distinguished of the Royal regiments serving with them, whether as regards bravery, discipline, interior economy, or steadiness and precision of manœuvre. And these regiments lay no claim to higher military efficiency than that possessed by other European regiments of the late East India Company."

Major-General Sir R. Vivian, formerly Adjutant-General of the Indian Army, writes: "For my own part, I conceive that such portions of the European troops as we have already as local troops in India are equal to any troops in the world. I do not see that there is any difference in their discipline or efficiency in the slightest degree. . . . . The local corps gains much from an observance of the interior economy of Her Majesty's regiments of the line. I have stated that the presence of the latter enables us to introduce into the local corps improvements gradually introduced into the Army at home. . . . . I believe there are no better troops under the sun. No better proof of efficiency can be given by a regiment than its conduct in the field. The gallant behaviour of the Company's European regiments during the recent struggle is universally admitted."

Lord Ellenborough, who was Governor-General in 1842, wrote: "There is no great difference between recruits for the Indian and British Service. I saw a Company's European regiment, and the fault seemed to me to be that they sent them out too young. I could see no other fault. Sir Charles Napier had the highest opinion of

the European regiments in the Company's service. In internal organization they are somewhat inferior perhaps, for the reason I have mentioned, viz., that some of their best men are taken away for other duties, but otherwise they are extremely well-conducted troops." Major-General Hancock, who took a prominent part in the struggle to prevent the amalgamation of the local regiments with the line, thought that "the appearance on parade of a regiment recently arrived from England is undoubtedly more striking than that of one of the local regiments. Officers and men are fitted with lighter and better made coats, are ruddier and fresher looking, and better set up, with an air of smartness and precision in their movements, which in the eyes of civilians and martinets contrast favourably with the somewhat rough and ready and sallow visaged Officers and soldiers of the local corps. Take, however, the two regiments on the line of march or on field service, and the apparent superiority disappears, and it is found that many of the habits and traditionary customs and ways that offend the eye of the barrack-yard disciplinarian are beneficial to health, and consequently to efficiency."

And last, but not least, is the opinion of Sir J. Lawrence. "While admitting," he writes, "that a periodical return to England does to a certain extent improve the character of a regiment, I believe this advantage is greatly over-estimated. For active service it is quite notorious that one corps that has been some years in India is often equal to two newly arrived ones for an arduous campaign. . . . . Again, while I admit also that the tone and interior economy of a Royal regiment may on the average be somewhat superior to that of a local regiment, the difference is not so marked as may be supposed."

Crossing over to the hostile camp, we find Sir E. Lugard writing: "There is a tendency to looseness of discipline in India . . . . if a regiment is in India too long it deteriorates in discipline. I think a regiment may remain twelve to fifteen years in India without injury to its discipline; after that time it begins to suffer from the effects of climate. It certainly tends to the discipline of a regiment to be relieved instead of being permanently located in India. . . . . No doubt a regiment coming out brings an improved system from England; it brings new life, as it were; there is not a doubt of it."

Sir F. Franks, who commanded a Division in the field, says: "I think that discipline deteriorates in India after a lengthened period of service in that country—I should say after twelve or thirteen years. I have served in the field with portions of the local European forces of artillery and infantry of the three Presidencies, and nothing could surpass their efficiency and intelligence, but from what I have heard, and from my own experience, they were not equal in discipline to Her Majesty's regiments when in quarters. Of course after long service in India both Officers and men in a certain degree lose their energies, but I have known exceptions."

It is only fair to mention that the two following opinions were written after the misconduct of the local troops, and when public opinion was excited against them. The Commander-in-Chief, Lord Clyde, writes: "As your Royal Highness knows, I have always been

strongly of the opinion that it is impossible, as shown by practice and experience, to maintain discipline in a local corps such as we expect in one of Her Majesty's regiments, but it did not occur to me that the loyalty of local corps might suffer. Recent events have shown that we cannot depend on that, and that at any time we are liable to have to meet dangerous combinations against our authority, to the prejudice of discipline and the intimidation of government. It is clear from what we have now seen that we can alone put faith in a discipline which is constantly renovated by return to England."

The Adjutant-General, following in the same strain, was of opinion "that high civil functionaries in India, and Officers of the Madras, Bombay, and even of the Bengal Army, from motives of delicacy towards the latter, have not, in their answers to the Governor-General's queries respecting the reorganization of the Indian Army, expressed the very decided opinions which they have emitted in private conversation and letters that the want of discipline of the Bengal Army was the chief cause of the Mutinies."

Examples such as the foregoing could be given indefinitely, but no more light would be thrown on the subject. On the unprejudiced mind it is thought that these extracts will leave the impression that though the Company's regiments fought as well and as bravely as the Queen's, there was a something deficient in their discipline in quarters.

It cannot have escaped notice that even those who defended the local troops most warmly have nearly all done so with a saving clause. Lord Ellenborough thinks they were somewhat inferior in internal organization. Major-General Hancock, that the regiments fresh from England were smarter. Sir R. Vivian, who believes that there was not the slightest degree of difference between them and the line, shortly after adds "that the local corps gain much from an observance of the interior economy of Her Majesty's regiments of the line," while Sir J. Lawrence confines himself to believing that a periodical return to England does to a certain degree improve the character of a regiment.

These statements are scarcely consistent with perfect efficiency, for, if perfect, why should the local regiments gain by observing the interior economy of line regiments, and why should all regiments improve in character by a periodical return to England? It is to all intents and purposes an acknowledgment that it is absolutely necessary to keep in India a number of regiments periodically relieved to serve as an example and prevent the discipline deteriorating in local corps.

Any inquiry, however, into the discipline of the Company's Army would be incomplete were the circumstances attending the discontent manifested in that army on its amalgamation with the Queen's Service passed over in silence. It is the more necessary to dwell on it as possibly from ignorance of the facts one not uncommonly hears it adduced as a strong argument against a local army. Now, whatever may be the disadvantages inherent in the local system, and we believe there are many, it is unjust to a gallant army to disparage and misrepresent it merely to force an argument. Some of the troops behaved

badly it is true, but were by no means so much in the wrong as is generally believed, as it is hoped the following unvarnished account of that unfortunate affair will show.

When the Indian Mutiny had been successfully quelled, the reorganization of the Indian Army became the burning question of the day. It may be assumed, as there is no evidence to the contrary, that the general opinion of the public, as well as that of the Government, was that the local army should be retained in India, the proportion it should bear to the Queen's Army being left open till the report was rendered by the Commissioners appointed to inquire into the question.

The Commissioners were unable, however, to come to any unanimous conclusion, but confined themselves to a report of the opinions of the majority and the minority. The former were in favour of the abolition of the local army, the latter of its being increased. This occurred in March, 1859, but a year before this, when speaking in the House of Commons of the transfer of the local army, Lord Palmerston said, "If they dislike the change I think in common justice they will be entitled to their discharge." This speech appeared in India, and was published and republished in every paper in the country. On 1st November, 1858, the Queen's Proclamation was read, and then it was that some of the troops composing the local army began to murmur against what they considered to be the very arbitrary conduct of the Government in transferring them without bounty to a different service.

The Commander-in-Chief in India, when reporting the circumstance to the Viceroy, pointed out that even in Queen's regiments a man could not be transferred from one regiment to another without his consent having been first obtained, and that as volunteers always received a bounty, he hoped the Viceroy would give his closest attention to the *practical* circumstances of the soldier's enlistment. He further proposed that the re-enlistment of the Company's European troops should be proceeded with immediately, and added with characteristic modesty "that he would not even hazard a suggestion in the matter were it not for his intimate acquaintance with British soldiers." Unfortunately his advice was not taken, the question was referred home by the Viceroy and placed before the Law Officers of the Crown, who came to a decision that the troops could be held to serve in the Queen's Army on their original attestation. On 8th April, 1859, the "final" decision of Her Majesty's Government was announced to the soldiers of the local army by the Adjutant-General. The text ran: "His Excellency the Viceroy and Governor-General of India in Council has now to announce to the European troops of Her Majesty's forces in the three Presidencies, who were formerly in the service of the East India Company, that Her Majesty's Government have finally decided that the claim made to discharge or re-enlistment with bounty is inadmissible." The result of this was to further exasperate the men, who in some regiments refused to obey their Officers, and the position of affairs assumed such a grave aspect that the Government reversed their "final" decision and allowed the men to take their discharge. Upwards of 10,000 availed themselves of this permission and were

sent home to England, where 3,000 re-enlisted into the British Army.

It has been calculated that the expense of transport of these men to England and of the Officers in charge of them, together with the return journey of the latter, cost no less than half a million of money; but even supposing it cost only one half this sum, the amount would have been sufficient to give every man of the local army double the bounty demanded.

It was a short-sighted policy; for a small sum the Government ran the risk of exposing to the natives the instructive spectacle of the British Army divided against itself. Nay, more: had a weak man been in command of the station where the troops as they expressed it "struck" with arms in their hands—a subtle distinction from the ordinary definition of mutiny which is not drawn in the present Army Act—they might have witnessed native troops being used by an English General against British soldiers.

The practical result of this outbreak was to fix the wavering opinions of those who were about to yield the point in favour of the advocates for a local army, and to cause a change in the opinions of some of its most distinguished supporters, notably Sir W. Mansfield and Sir Patrick Grant, who both changed their previously recorded views.

The mere legality of the step cannot be questioned. The Crown took on itself all the obligations of the Company without modification, the change of masters was purely nominal, no soldier or Officer was any the better or any the worse for the political revolution. They had been lent in trust as British soldiers to the Company, which up to that time had acted for the Crown. The Crown had now resumed the trust, but the terms of service remained identically the same. Soldiers, however, are not lawyers, and it cannot be doubted that they honestly believed that they had a right to re-enlist. It is worthy of remark that in November, 1858, that is, before the discontent in the local army had openly shown itself, Colonel Leslie, the Commandant of the Company's depôt at Warley, when giving evidence before the Commission appointed to inquire into the reorganization of the Indian Army, stated, in reply to a question put to him, that the men understood that they enlisted exclusively for the Indian Service. This opinion was backed by the highest authority in Parliament as an act of "common justice;" besides this the men knew that the Commander-in-Chief and others were, in the first instance, strongly in favour of the claim; it is not, therefore, to be wondered at that discontent and insubordination manifested itself, especially at a time when, as Sir J. Lawrence said, "so much had occurred to demoralize the English soldier." Men cannot continually wade through scenes of carnage—they cannot pass whole months struggling for their very existence against the most terrible odds, without discipline being injuriously affected.

Of the blunder the authorities made in not acting on the advice of the Commander-in-Chief, "who knew the British soldier," and how tenaciously he clings to his rights, it can only be characterized as one

of those blunders which are worse than crimes. They well knew it had been customary to re-attest and pay bounties to soldiers on transfer from the Queen's to the Company's service, and the best proof that they had themselves doubt concerning the validity of the transfer was, that it was thought necessary to take a legal opinion on it. Yet the civilian element prevailed—prevailed as it invariably does when a decision on a purely military matter involving a knowledge of soldiers is required.

"The fact," writes Colonel Durand, "is undeniable that after having successfully gone through the fiery ordeal of 1857, and after having been conspicuous in crushing an unparalleled revolt, no troops in the world were animated by higher feelings of pride in themselves, confidence in their Officers, loyalty to the State, and content with their service, than were the Company's European troops early in the year 1858. The fact is equally undeniable that by the middle of 1859 there had been such a revulsion of feeling that when the option of discharge was given 12,000 men preferred taking their discharge to continuing with the corps in which they had achieved signal and at one time little hoped for success."

The cause of this revulsion of feeling is not to be traced to one source, though undoubtedly the decision of the Government not to allow re-enlistment was the spark that set fire to the train; the cause was in a fortuitous combination of circumstances. To begin with, the small army, with a paucity of old non-commissioned officers, was inundated with undrilled and undisciplined recruits, and consequently furnished the best possible material to be moulded at the will of a few designing men. The troops were greatly exasperated at what they considered to be the injustice of their treatment, and that nothing was done to allay the incertitude in which all ranks were kept did not tend to diminish the excitement. They had the local press egging them on to demand their rights, and they knew that they had the sympathy of a large number of civil and military Officers; there was besides a certain soreness engendered by the belief, which rested on a good foundation, that they were being shouldered out of subordinate civil and military appointments, which they had hitherto been given as some compensation for exile in a tropical climate. Under these circumstances it is not to be wondered at that they began by respectfully remonstrating, thinking that the Government would give in, and once embarked on the treacherous sea of remonstrance drifted along into open mutiny.

Whatever our views on the question of a local army, it is impossible not to acknowledge that the men were cruelly treated and placed in a most trying position by the indecision of the Government; whether the alleged indiscipline of the local army was the predisposing cause it would be presumptuous with the scanty information at our disposal to venture an opinion, but this we may say, that if the advantages and disadvantages of the two systems are in other respects equally balanced, the events above detailed would turn the scale in favour of that system which allows, even on the first suspicions of discontent manifesting itself, the prompt removal of the corps to another station.

Nor should it be forgotten that tradition is strong in the Service, and to any local force which may ever exist in India it forms a precedent to which men will revert in times of dissatisfaction, for it will ever be remembered that the Government yielded to intimidation, and that the soldiers of the local army were victorious along the whole line.

Passing now from the consideration of discipline to a subject which is closely allied to it, we find ourselves face to face with the most important of all the questions which relate to the British soldier in India, namely, his health at different ages and under various conditions of service. This really is the very pith of the whole subject, and one which it is exceedingly important to closely examine before dogmatizing on any particular system for the reorganization of our Army in India.

The length of service being equal in both systems, there is no reason why there should be any very material difference between the casualties by death and invaliding in a local or in a movable army, saving and above the fact that regiments in the first two years of service in the country are said to suffer more than in any other year. This is an important consideration in deciding on a system, for supposing the army to be relieved every twelve years, one-twelfth, or 5,000 men, are annually exposed to greater risks by the relief system than by the local, and this is quite irrespective of the ordinary drafts which will be small or large in either system, as the service is long or short.

Unfortunately no statistics[1] are available to show to what extent this increased mortality and invaliding exists among newly arrived regiments. The Army Medical Reports overlook this point. Here and there a few isolated instances of the record being kept are shown, but the numbers are too small to allow of general deductions being made from them. But though no statistics bear on the point, the opinion that a high rate of mortality does exist amongst new comers is held by all medical men, some even are of opinion that it is irrespective of age. For instance, Deputy Surgeon-General Muir writes, "It is during the first and second years' service in the plains of India that regiments are most sickly, and the mortality during these years is often greater than during the whole of their remaining service in India, epidemic diseases excepted. "This," he adds, "is a very significant fact, and one which does not seem to have received that recognition which its importance demands."

This is undoubtedly the reason why the annual rate of mortality in the old local regiments was less than that in the line, when the conditions of service were in other respects the same.

It must not, however, be thought that this latter statement was allowed to pass unchallenged. It was one of the most hotly contested questions of the great controversy which arose on the amalgamation of the local with the Queen's Army, for both parties felt that

[1] The Army Medical Reports only give the effect of age on mortality, irrespective of length of service in India.

it was a question of vital importance to them. On one side it was urged that long residence in India is productive of high rates of mortality; that the European constitution can never become acclimatized, but on the contrary gradually deteriorates, and that regiments periodically relieved were healthier than those serving continually in the country; while on the other it was said that a Queen's regiment was rendered almost unfit for duty owing to the high rate of sickness and mortality in it during its first few years of service in India.

It is not intended to do more than to point out the salient features of the controversy, because materials were wanting and are still wanting to completely elucidate the truth. Both sides supported their arguments with figures, but some of the tables extended over too short a period of time; in some men killed in action, or who died of exposure on service, were included; in others they were excluded: in short the majority of the figures were just sufficient to cause doubts without clearing them.

Perhaps the most valuable Return was that furnished by Sir A. Tulloch, showing the sickness and mortality in each of the three Presidencies for thirty-nine years, *i.e.*, from 1817 to 1856, of which the following is a summary:—

	Aggregate strength.	Deaths.	Annual ratio of deaths per 1,000.
Queen's regiments ..	792,939	55,584	70·0

These numbers are inclusive of men killed or died of wounds or sickness in the Mahratta, Pindaree, Burmese, Afghan, Scinde, and Punjaub campaigns, and in the first Chinese war. Exclusive of these losses, Sir A. Tulloch considered that the average would be reduced to 60 per 1,000 annually.

The following table is taken from the Statistical Society's Journal,[1] and relates to the years 1825 to 1854, both inclusive:—

	Aggregate strength.	Deaths.	Annual ratio of deaths per 1,000.
Queen's regiments ..	533,752	36,712	68·8
Local ,, ..	318,272	16,341	51·3

Making liberal allowances for errors, the loss by death in the Queen's troops tallies so nearly with that given in the first table, that it is only fair to take it as substantially correct. This difference can only be accounted for by the high rate of mortality in regiments fresh out from England, which before they had become what has been called morally, in contradistinction to physically, acclimatized, suffered from want of experience in not knowing what to avoid, and from exposure to the sun. If it be allowed that the above figures are trustworthy, it becomes an important point in considering the relief system, for whether the death-rate be high or low, the proportion of deaths in one system will be always higher than in the other.

One cannot help, in passing, comparing this terrible death-rate with

[1] See vol. x.

the mortality of the present day, which, during the last twenty years,[1] has never reached 30 per 1,000, and was by the latest published Report by the Medical Staff, only 12·82 throughout the entire Army of India.

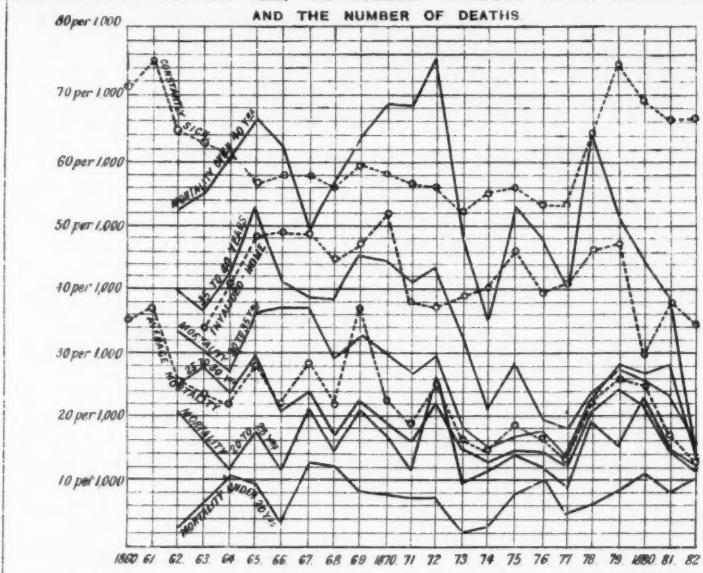
If the Army Medical Reports fail us when information is required as to the effect of length of service in India on mortality amongst men of different ages, they are, on the contrary, well stocked with information on the effect of age on mortality considered irrespective of the number of years the men have served in the country. The accompanying chart (Fig. 1, Plate IV) has been compiled from the last twenty annual Reports, and is well worthy of study. It will be remarked that up to the year 1872 the striking feature in it is the rapidly progressive increase in the mortality with advancing years. This was frequently commented on in the Reports. "This result," runs the Report of 1860, "is completely at variance with the prevalent opinion of the advantage of long-continued residence in hot climes, and of much importance in determining the question of frequent reliefs." In 1861 we find the following remarks in the Report: "The ratios show a very great increase in the mortality of thirty years of age and upwards, a result in accordance with the observations at almost all the tropical stations where British troops are employed." The Report of 1862 draws attention to the fact, that the mortality at the ages of 35 to 40 is double that at the ages of 20 to 25, and adds, the practical bearing of these results upon the question of the relief of regiments in India must be obvious. In 1869, Inspector-General Beatson writes: "All statistics show that with advancing age, and it may be presumed, as a rule, with proportionally longer Indian service, the mortality among men, say from 30 to 40, is twice as great as among men from 20 to 25. The above consideration is to my mind a complete answer to those who would urge the expediency of again reverting to a local European force for India; such a change would be a retrogression." But to come to more recent times, in 1879 Brigade-Surgeon Marston, describing the susceptibility to typhus fever of the European constitution in India, writes: "It is at its maximum the first year, decreases during the second and third, and is practically nearly exhausted between the third and fourth years of an Indian residence;" and adds, "It is necessary here to guard against a possible inference from these tables. While the young soldier newly arrived in this country exhibits this proclivity to typhus fever, his chances of contracting and dying of other diseases are much less than those of older and longer resident soldiers, in fact, the average expectation of life diminishes in India, as at home, in proportion to age, only in a far higher ratio."

The same opinion is to be found in all the Reports, and examples might be multiplied indefinitely, were it not considered that sufficient evidence has been produced to show what a consensus of opinion there is amongst medical men on this subject.

The point, however, to which it is desired to draw attention in the chart is one which, curiously enough, passes unnoticed in the Army

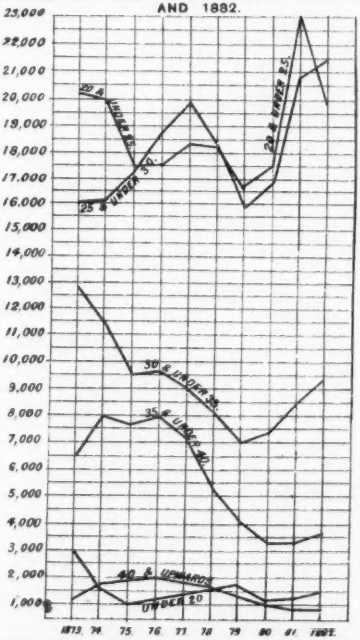
[1] See Plate II.

CHART SHOWING THE EFFECT OF AGE ON MORTALITY OF THE EUROPEAN ARMY IN INDIA BETWEEN 1862 AND 1882, THE NUMBERS INVALIDED HOME, CONSTANTLY SICK AND THE NUMBER OF DEATHS.



Nº I.

CHART SHOWING THE AGES OF THE MEN OF THE ARMY OF INDIA BETWEEN 1873 AND 1882.



Nº II.

Harrison & Sons Lith. 59 Martins Lane W.C.

Medical Reports, though an explanation of the fact from experts would be of the greatest possible value. It is the tendency of late years for all the death-rates to converge. Omitting from consideration the line representing the mortality of men above forty years of age, as it refers to numbers so small that the results are not reliable, it will be seen that up to about 1872 the increased mortality at advancing ages was very clearly marked; but in 1873 and 1874 there was a tendency in the lines to approach each other; this became more marked in 1876 and in the succeeding years till 1882, when the extraordinary phenomenon of a difference of only 5·27 per thousand deaths is found between men of all ages under forty years forming the Army of India.

The cause cannot be that of late years the numbers of men above thirty years of age have so diminished that the percentage is unreliable, for a glance at Fig. 2, Plate IV, showing the ages of soldiers in India, will prove that the numbers are sufficient to secure a good average; nor is it that the death-rate of men under thirty years of age has gone up, for it will be seen that with the exception of during the Afghan war, there has been a gradual but almost steady fall in the mortality of men of that age. It is not the death-rate of the young men that has risen to the level of the mortality of the old, but the old, on the contrary, whose decreasing death-rate has lowered their mortality almost to the level with that of the young.

It may be said that it is only a coincidence, but if so it is remarkable that it should extend over so long a period, and in default of any other more probable solution to the enigma being forthcoming, we believe the true solution to be that the inducement to men, whether enlisted before the introduction of short service or after it, to obtain their deferred pay and pass into the reserve, has been so great that nearly all, except non-commissioned officers and men with some interest to keep them in India, and whom the climate suited, have taken their discharge; in fact, that the men serving over thirty years of age were more or less selected men, and therefore not so likely to suffer from the effect of climate.

If this be the true explanation, it points out how we should, as regards the ages of our soldiers, garrison India, namely, by permitting the ordinary soldier to serve up to, if necessary, thirty years of age, and allowing only *selected* lives to extend their service beyond that age.

With regard to the line of average mortality, it should have been before mentioned that it includes the deaths at Netley of men who have been invalided from India, so that it is not kept down by excluding deaths due to service in India, nor is it lowered at the expense of invaliding large numbers of men to England, for the average number of invalids is decidedly less of late years than it was formerly. The least satisfactory line is the "constantly sick," which, for the five years preceding 1882, has been abnormally high, though not so high as it was between 1860 and 1864.

By the last Return (1882) it stands at 66·38 per thousand, which is equivalent to 3,806 men constantly non-effective through sickness.

Examining the mortality lines separately, we find that the death-rate of men between 20 and 25 years of age only once (in 1872) rises above the average mortality of the whole Army, and that the line showing the death-rate of men between 25 and 30 years of age has, since 1866, always been below the average mortality, which means that had the Army been kept between the ages of 20 and 30, the average death-rate would have been lowered some 3 or 4 per thousand, equivalent to 180 to 240 lives per annum. The mortality line of men between 30 and 35, which was till recent years considerably above the average, and has only twice in 20 years been below it, while that of men between 35 and 40 has, of course, never been below the average.

Thus as far as the experience of the last twenty years can be taken as conclusive, it points to the incontrovertible fact that the younger the Army the less will be the mortality, and that if economy is to be studied it should be borne in mind, when working out the details of any scheme, that the Army should be kept as young as *is compatible with efficiency*.

Such is the result of the study of the available statistics, but there is yet another description of evidence to produce which corroborates the above in a remarkable manner. In 1876 the opinion of the most distinguished soldiers in India was obtained with a view to ascertain the age at which the British soldier of naturally sound constitution is for the moment of the greatest value, considering the nature of the services that may be at any time required from him in India. To this query His Excellency the Commander-in-Chief in India (Sir P. Haines) replied that he considered a soldier at his best from 27 to 30 years of age, with 5 years' service in India; and that after the age of 30, deterioration sets in, for men in the ranks, but not for non-commissioned officers. The Adjutant-General of the Indian Army, Sir P. Lumsden, was of opinion that 27 years is the age at which, for the moment, the British soldier is of the greatest value.

It is unnecessary, however, to give all the opinions which embraced the experience of Officers holding the chief commands in this country as well as of the Medical Staff; suffice it to say they did not differ greatly from those just cited. From them Sir H. Norman has drawn the following conclusions:—Firstly, that the British soldier of naturally sound constitution is for the moment of the greatest value from 25 to 30 years of age, or at the age of $27\frac{1}{2}$; secondly, that the age and length of service which produce the most valuable soldier may be taken to be from 25 to 30 years with 3 to 8 years of Indian service, or $27\frac{1}{2}$ years of age with $5\frac{1}{2}$ years' Indian service; thirdly, that deterioration commences after 30 to 35 years of age, or taking a man of $32\frac{1}{2}$ years of age, that it will commence with 10 or 12 years' service in India. On that the military and medical opinions differ a little, the military opinion on the average gives deterioration as commencing from 35 to 40, the medical as commencing from 30 to 35.

Giving evidence before the Army Reorganization Committee of 1880, Lord Strathnairn was of opinion that, as a rule, six or seven years' Indian service is as much as he expected from the soldier, to be prolonged if necessary for a couple of years. The Report of the

Commission recommended that foreign service should not exceed eight years, and added, it is essential that the constitution of the men should not be injured so as to impair their chances of earning a livelihood after retiring to civil life. Before the same Committee, Sir W. Muir expressed an opinion that after five or six years' service in India the soldier begins to deteriorate, and that eight years was the maximum if the man was to come back with a prospect of earning his livelihood. In the report of the causes of the reduced mortality in the French Army serving in Algeria, the French doctors were of opinion that the soldier stands the conditions of service in that country with least damage at the age of twenty-five years. And in a Bill for the formation of a colonial army, which will shortly be brought before the Chambers, it is proposed to pension men after fourteen years' service, from which we may fairly presume that the War Minister deems the ordinary soldier of thirty-four years of age unsuited to the active duties required of him in tropical climates.

It must not be thought that the above is written in defence of young soldiers or of the system that floods the Army with them, for up to the present the subject of short service has been carefully eschewed as likely only to complicate the question of the local *versus* the relief system. The fact that immature youths are unfit for the hardships incidental to campaigning is so clearly established by the experience of recent wars, that it is unnecessary to enlarge upon it here; but we must be careful in declaiming against young soldiers, not to forget that there is a mass of statistical evidence supported by the opinions of experienced Officers, that a soldier beyond a certain age is as likely to die or break down as the immature recruit.

Assuming the above inquiry to have been fairly conducted, the weight of the evidence, as regards conditions of service, points to the fact that the soldier should not be sent to India before he is twenty years of age, and that he should not, except in the case of men of remarkably good constitution, be allowed to serve more than eight, or at the outside ten years in the country.

Having now obtained some definite conditions of service which combine efficiency with economy of life and health, it remains to apply them to the local and relief system in turn with a view to determining which lends itself the more readily to these special terms of service. But before doing so, it will be as well to complete the comparison between the local and line systems before the Mutiny by showing the difference, as far as possible, in cost.

No private individual could, with the information attainable from public documents, arrive at anything like an exact result. The cost of the retirement of Officers, the amount of pensions, and a thousand other items preclude one from attempting it. Fortunately, however, information is not wanting on this head, for in 1860, when the question of the future organization of the Indian Army was considered, the Secretary of State for India employed Mr. Hammick of the Statistical Department to report on the comparative cost of the troops of the line in India and of the European troops of the East India Company.

This gentleman went into the question at great length; he had all available sources of information at his command, and, being a civilian, he was, it is presumed, without partiality for either system. In rendering his Report he particularly stated that the results must be only received as approximate, as they were based on imperfect information.

He found that if the establishments of the local army were assimilated to those of Her Majesty's Service the excess would be for—

	£	
Infantry about.....	9,410	Per 1,000 men of all ranks.
Cavalry ,, ...	5,670	
Artillery ,, ...	6,280	

He was of opinion that the rate of mortality in the local European force had hitherto been lower than amongst the line regiments in India, but he added that the proposed system of more frequent reliefs will probably equalize the mortality in the two armies, while it will diminish invaliding from the line regiments and render the men available for future service elsewhere, but that financially these advantages would be counterbalanced by the increased expense incurred for the transport of the line troops to and from India, and for maintaining out of the Indian revenues the additional force requisite to cover the loss of service of the Officers and men of relieved regiments constantly on the seas.

In his paper Mr. Hammick stated at length the grounds on which his conclusions were based.

Speaking generally, the results were accepted as fairly accurate by both parties, except on two points—firstly, Sir A. Tulloch and others insisted that the first cost of training and sending out the local troops to India and bringing home the line troops they were to replace should be taken into the calculation, while Mr. Hammick considered that as the replacement of line by local troops might be made gradually, the expense would be spread over an indefinite number of years, and need not consequently be taken into consideration.

The second bone of contention was the calculation for the non-effective services. In his Report Mr. Hammick based his calculation on the following figures:—

	Average effective strength.	Average number annually pensioned.	Ratio per 1,000.
Line.....	30,000	567	18·9
Local	10,330	131	12·7

and commented on them, pointing out that the disparity apparent in the proportion of men pensioned in the two armies might arise either from the number of the line being overstated or from some peculiar agency at work by which the numbers admitted to pension from the local army were kept down.

It was, however, pointed out by the critics that the two averages brought into comparison were computed from different data, and therefore necessarily failed to show the real difference between the proportion of pensions in the two armies. That whereas the average of men pensioned from the local service had been obtained from the

years 1851 to 1856, a period during which discharges were fewer in proportion to the force, that for the Line had been calculated between 1845 and 1853, when they had been very much greater. Had both been calculated on the average for the years 1851–56, the number admitted to pensions in the line would be slightly less than in the local service.

The critics, however, omitted the argument—which seems to be a sound and convincing one—that while the partizans of the local army insisted on the fact that the men composing it were comparatively healthier than the line, in the same breath they declared that their pension-list was comparatively lower. The two statements are contradictory, and seem to have so puzzled Mr. Hammick that he was obliged to attribute it to "some peculiar agency."

In his estimate he has taken the charge for pensions in the line at 7*l.* 13*s.* 4*d.* per head of the effective force in India, and the same charge for the locals at 5*l.* 16*s.* 9*d.*; but as we may fairly conclude that he was mistaken in making one charge greater than the other, the previously given cost of line troops over local must be reduced 1*l.* 16*s.* 7*d.* per man, or about 1,800*l.* for every thousand, reducing the estimate to—

	£	
Infantry about.....	7,610	Per 1,000 of all ranks.
Cavalry „	3,870	
Artillery „	4,480	

Calculating at the present strength of the Army in India, it would make a difference in favour of a Local Army of—

	Strength.		£	£
For Infantry.....	42,252	about	321,520	391,320
Cavalry	4,411	„	17,000	
Artillery.....	11,944	„	52,800	

This calculation of course is only true when the two systems, as regards their depôts, were worked on a different plan. As before described, the recruits of the Company were sent to India on enlistment, almost totally untrained, whereas men embarked for line regiments were to some extent trained soldiers. The Company's system was, of course, very much cheaper; but while it was possible to work it on a small scale, it would not be possible to adopt such a system in the present day.

When considering the relative cost of the two systems, it is quite impracticable to calculate on reverting to the old depôt system of the Company. We are forced to accept the present Depôt Brigade system as the machinery for raising recruits for either a local army or for one on the relief system. Had recruits, at the time the above estimate was made, been raised for both armies on the same principle, the extra cost of the line troops would have been reduced by 180,000*l.*, bringing the excess down to 211,320*l.* per annum.

Supposing, in order to make a comparative calculation of cost between the present system and a localized army system, that the

length of service is the same in both armies, viz., eight years, and that Officers' and men's pensions are the same in every particular, there would be a saving in the local army on four items. Firstly, the expense of conveying the annual reliefs by battalions and regiments to and from India. Secondly, the loss of the services of the regiments while on the voyage. Thirdly, the loss by men taken out and brought home, who have in the one case served a portion of their engagement before embarkation, and in the other have still a portion to serve when brought home; and, fourthly, the charge entailed by additional drafts necessary to replace losses caused by the relief system, which exposes a number of men to extra risks of life and health during the first and second years of their service.

The first, namely, the cost of conveying reliefs, is easily calculated for during the last eleven years (see Table IV), as an average of 4,456 men have annually embarked for India, and 3,297 have been brought home in regiments and batteries, making a total of 7,753 men. Taking the passage money at 19*l.*,[1] the extra cost of transport entailed by the relief system is 147,307*l.*

The second item, the loss of service of men on voyage, is also easy of computation, though it is doubtful whether it ought to be taken into account in making comparative calculations in the present day. Formerly it was always allowed, on the ground that the diminution caused by the relief of a portion of the European Army in India every year necessitated an additional force being kept in the country. This was, perhaps, a fair assumption in the days of the Cape route, and before railways were introduced, but in the present day steam has brought India so near England, that the danger of allowing the Army to temporarily fall below its strength has been minimized. Still, to prevent the possibility of an accusation of having understated the extra cost of the relief system, the charge must not be omitted. It amounts to 22,659*l.*, taking the average value of service of each of the 7,553 men conveyed to and from India at 3*l.*, and allowing five weeks for the journey.

In order to arrive at the third item, that is, loss by men not serving their full period in India, the passage money of a man to India and back is taken at 28*l.*,[2] and 7*l.* added for expenses of journey to and from the port of embarkation at home and in India, making a total of 35*l.* For reasons which have been before stated, the maximum number of years' service for the ordinary soldier in India has been taken at eight years. It follows from this that the annual charge on the Indian Government for travelling expenses[3] of a soldier serving

[1] From a Parliamentary paper published in 1868, it appears that the five Indian transports cost approximately 1,088,212*l.*, and took to India that year on an average 44 Officers and 825 men, besides women and children. The estimated cost per head, including 4 per cent. on the capital cost and working expenses, averaged 19*l.* 0*s.* 3*d.* per adult. The actual cost of each rank was—Officers, 90*l.* 5*s.* 4*d.*; staff sergeants, 17*l.* 11*s.* 3*d.*; and troops, 14*l.* 8*s.* 4*d.*

[2] It is a curious coincidence that the cost of sending a man to India by the Cape in the old days was also 14*l.*

[3] Exclusive of changes of station in India, which would take place equally under both systems.

eight years in the country amounts to 4*l.* 7*s.* 6*d.* If he serves only seven years in the country the annual charge becomes 5*l.*, and so on, as shown in the following Table:—

Annual charge for travelling expenses from and to England of a man serving—	£	Proportional annual charge for transport to and from India. £ *s.* *d.*	Total increased charge to Indian Government through men serving less than eight years. £ *s.* *d.*
8 years in India	$\frac{35}{8}$	4 7 6	....
7 „ „	$\frac{35}{7}$	5 0 0	4 7 6
6 „ „	$\frac{35}{6}$	5 16 8	8 15 0
5 „ „	$\frac{35}{5}$	7 0 0	13 2 6
4 „ „	$\frac{35}{4}$	8 15 0	17 10 0
3 „ „	$\frac{35}{3}$	11 13 4	21 17 6
2 „ „	$\frac{35}{2}$	17 10 0	26 5 0
1 „ „	$\frac{35}{1}$	35 0 0	30 12 6

The Annual Return of the British Army does not give the length of service of men proceeding with their regiments to India, so in default of this, and in order to get at some idea of the relative length of service of men in a battalion proceeding to India, Table III[1] has been compiled from Returns showing the length of service of men in regiments despatched to South Africa in 1879, and again, to prevent any understatement, nearly 300 men, that is, every man over four years' service, has been assumed only to stay three years in the country, less 25 per cent., which has been deducted from each class to represent men who have, or who will at a future period re-engage. The loss in a regiment similarly composed to this one by men returning before they had served eight years in the country, would be as follows:—

Length of service with the colours on embarkation.	Number less 25 per cent. re-engaged men.	Increased charge per man on account of transport. £ *s.* *d.*	Total increased charge through men not serving eight years in India. £ *s.* *d.*
4 years and upwards	220	21 17 6	4,812 10 0
3 years and under 4	39	17 10 0	682 10 0
2 „ „ „ 3	89	13 2 6	1,168 2 6
1 „ „ „ 2	181	8 15 0	1,583 15 0
Under 1 year	136	5 0 0	680 0 0
	665		
25 per cent. re-engaged	221		
Strength of battalion	886		8,926 17 6

[1] See page 334.

The increased charge on the battalion of 886 is therefore 8,926*l.*, and consequently on 4,456 men (the annual average number despatched to India in regiments and batteries during the last ten years) it amounts to about 46,000*l.* In like manner, the 3,297 annually brought home would cause an increased charge of about 34,000*l.*, making a total on this item of 80,000*l.*

As has been before observed, there are no statistics from which the increased death and invaliding rate due to recent arrival in India can be obtained, but, in order to be on the safe side, and free from the imputation of having understated the number, let the deaths, and invaliding home, in regiments during their first year of service in India be supposed to be double the average rates, and 50 per cent. higher during their second year.

The charge on 4,456 men would, allowing the soldier to be worth 92*l.* in his first year and 132*l.* in his second, amount to—

			£	£
1st year by deaths 20 per 1,000 above the average[1]	88	264 ×	92	24,288
1st year by invaliding 40 per 1,000 above the average[2]	176			
2nd year by deaths 10 per 1,000 above the average	44	132 ×	131	17,282
2nd year by invaliding 20 per 1,000 above the average	88			
	396			41,570
Replacing these 396 men at 92*l.*				36,432
				78,002

The four items amount, therefore, as follows:—

	£
1st. Transport for regiments and batteries to and from India per annum	147,307
2nd. Loss of service men during transit	22,659
3rd. Loss through men serving less than eight years in India	80,000
4th. Loss by increased death and invaliding rates during first and second years' service of regiments in India	78,002
	327,968

This sum, which represents about one fifty-fifth part of the annual expenditure by the Indian Government on the entire Army of India, is approximately the difference in cost between the relief and local system worked with eight years' service, the regiments being relieved every thirteen years.

If the term of service with the colours were lengthened, the amount would be diminished, though not to any great extent, as the items

[1] Average death-rate from 1872 to 1881 ..... 19·22 per 1,000
[2] Average invaliding rate from 1872 to 1881 .... 40·55 per 1,000
See Table V, showing cost of soldier (page 335).

1, 2, and 4 do not depend on the period of service. If, on the contrary, the time regiments remain in India were prolonged, all the items would be diminished, for the longer the regiments are retained in India, the nearer does the Army approach in its condition to a local one.

The principal item of the extra charge involved by the relief system is for the transport of regiments to and from India, which is not without its advantages from an Imperial point of view, as it enables Great Britain to have for five months in the year a number of regiments on the high seas. The interests of this country are so varied and scattered that it may become necessary at any moment to despatch a force to any part of the world. Notable instances of this have occurred so recently, and must be so fresh in the minds of all, that they need not be enumerated.

It gives us the power at critical times of having a force ready to seize certain points. By a slight change in arrangements regiments coming from and going to India may be timed to meet in the Mediterranean or elsewhere, where their presence at the right moment may be valuable beyond measure.

One argument which has been advanced in favour of a local army is, that if India has not an army of her own, she will on some occasion when England is in difficulties in Europe be denuded of troops, because public opinion, which influences every Government, would be concentrated on the European difficulty, and the risk to India would be overlooked, and the distant Empire forgotten amid the troubles at home.

The time of the Crimean War is instanced as a case in point when regiments were withdrawn, and the garrison of India so reduced in establishment that when the legitimate demand for troops for the Persian war was acceded to, the country was left so denuded of troops as to render the tenure of it during the early days of the Mutiny most precarious.

There would undoubtedly be a great deal to be said in support of this argument if the army were to be purely a local one, which could not be taken out of India; but even the greatest advocates of the local army have always allowed that the army should in times of extreme emergency be available for service in Europe. The supposition is, that being forced to take certain measures to obtain the local army, the time necessarily consumed would oblige the Government to consider the matter and act as a wholesome check on precipitate action. The effect of this would be that the Home Government would get the troops, notwithstanding remonstrances by the Indian Government to the contrary, but the delay might be fatal.

Politically it is of the first importance that the Government of this country should have the powerful Army of India at its entire disposal, to increase its influence at the Councils of Europe. As to its not being equitable to charge the taxpayers of India to strengthen the hands of our Government in Europe, it must be remembered that India can be threatened elsewhere than on the North-Western frontier. The solution of the Eastern problem in our favour concerns

India as much as it does ourselves, and India must be prepared with treasure and sacrifice to take her share in the settlement.

If the British Empire is to remain in her present position, all her Colonies must be prepared to support her, and all work together for the common weal, and nothing can be more opposed to this in principle than the tying up in India under any conceivable condition of a third of the British Army; such a course would tend to diminish instead of adding to our national strength.

There is, in fact, no system so suited to the various duties the British Army is called on to perform as the relief by rotation, there is an elasticity about it that all others lack. The force can be increased or diminished in any Colony temporarily or permanently. Regiments can be sent from India to the Cape or to Egypt at a moment's notice, merely as a precautionary measure, without considering local interests or waiting for an extreme emergency to justify the move. Regiments much cut up can be relieved by fresh regiments from England, and in case of having to send large reinforcements to India, there can be no question whether a score of fresh regiments would not be more efficient than a body of recruits of equal strength.

Lord Elphinstone was of opinion that a local army could never be equal to the line, "but must ever feel conscious of a species of inferiority, from the fact that they would not fight the battles of England on the battle-fields of Europe." This remark has gained tenfold significance since the date on which it was written. Formerly the threatening of India by a European Army was entertained by only the most farseeing of beings. Year by year since that time the possibility of invasion has become greater and greater, as our great northern rival has steadily advanced in the direction of the North-Western frontier of India.

It is said of Napoleon that he sneered at Wellington, and tried to lower his reputation in the eyes of the French Army by describing him as a Sepoy General, intending to convey the idea that accustomed only to fight against natives he was but little to be feared when pitted against men trained in the European school of warfare. We surely cannot afford to give our adversary a single trick in the game, and yet we assuredly should do so in putting the Army of India in a position to be described as a local force enervated by long residence in a tropical country, and unaccustomed to meet Europeans in the field.

It would be almost if not quite impossible to prevent a local army having local interests and local influences. Discontent on the subject of pay or some privilege, which could be met in a line regiment on the first suspicion of its existence by removal to another station, might create difficulties in a localized force of the gravest description, for it must be remembered that there is always a certain amount of danger to a country in having in a distant Colony and without any power of using coercion, a large force in a position to dictate its own terms—a danger which is reduced to a minimum by constantly moving the army.

But, after all, is it possible to establish a local force to form an integral part of the present Army without according it privileges

above those enjoyed by the other regiments of the Service? Why should men and Officers elect for Indian service in sufficient numbers, and what guarantee have we that the required numbers will be forthcoming? Throughout this essay—especially in the calculation of the extra charge due to the relief system—it has been assumed that a local army can be organized without any special inducements; but this we firmly believe to be impossible.

Inducements in the shape either of increased or earlier pensions to Officers and men would have to be held out as a bait; but this means a large expenditure for non-effective services, which would soon swallow up the 328,000*l.* expended on the reliefs.

The advocates of the local service, in fact, want to get the advantages of both systems. They fairly claim economy on the score of transport and through the local troops enjoying better health, and then calmly assume that men will undertake the more onerous engagement of service in India without any compensating advantages.

If, now, we have right on our side, when we insist that inducements of some sort must be held out, it follows that the introduction of the local system necessitates men entering the Service under different conditions—one set for Indian and the other for home or colonial service, and involves us in all the inconveniences of a double system—which has been dwelt on at some length in this essay.

It is impossible to fix for an indefinite period the establishment of the Army of India or of any of the Colonies. Only the other day the reduction of the artillery in India was contemplated. Suppose it had been determined to permanently increase the artillery at the Cape, and that the men of the artillery in India had enlisted for service in India only—except in case of emergency—there is no denying that this would have caused great inconvenience, and, possibly, great trouble.

Put the clock on fifteen years! Let Herat pass into other hands and force us to occupy Candahar,[1] and, therefore, to necessarily increase the garrison of India, and further assume that the present army in India has at that time begun to recover from the shock of being reorganized under the local system, how is it to be reinforced at perhaps a critical time? The Home Army is serving under different conditions, though of course liable for service abroad. Are the regiments sent out to be localized? If they are, portions of the garrison of India will be for years in a transition state; but it is not necessary to further pursue this phase of the question.

The effect of the localization of the Army in India on the Home Army would be nothing less than disastrous.

If the system be adopted for India it would probably be extended to the Colonies, and the British Army at home would speedily become a sort of superior militia, with no more experience than is to be gained at the Curragh or Aldershot. Regiments like individuals are formed in a measure by their surroundings. Just as an individual gains independence of character, power of resource, and self-reliance by—to

[1] This was written last summer, since which time the clock has advanced quicker than the writer anticipated.

use a familiar expression—knocking about the world, so does a regiment: it gives a tone to the mass.

It is no argument to point to the localized German regiments; the conditions under which that Army exists and the system by which its ranks are filled are so entirely different from those in our Army that their experience cannot, with the slightest degree of safety, be applied to our Service.

India, too, is the great school for Officers and men of the British Army. There is scarcely an Officer of note in the Service who has not served his apprenticeship in that country. But a whole lifetime is not necessary to acquire the experience that India affords, it can equally well be gained in a few years. Hundreds of Officers go to India for a short time because their regiment is stationed there, who would never join a local army to be permanently located in the country. There can be little doubt that even if the Officers of the Indian and home battalions were on the same list there would be a tendency for one set of Officers to always serve abroad and another at home, which would affect the efficiency of the Army at large—in reducing the number of experienced Officers.

As to the question whether a part of the Army should be localized and a part retained on the relief system, it has incidentally been discussed in considering the larger measure. Both systems cannot be right; if the local system be wrong for the whole Army, it must be wrong if applied to a part. At the same time, it must be acknowledged that several of the strongest arguments against an entirely local army lose a good deal of their force when applied only to a part. For instance, the want of elasticity complained of in the local system would not be felt where the two systems were combined.

The local troops might represent the garrison which could under no circumstances be reduced, while ordinary line regiments could be augmented or diminished in number at will. Nor would there be the same risk of the local portions of the Army falling into a state of indiscipline with a large number of line regiments in the country. At the same time the saving in extra expenditure would only be reduced proportionally to the strength of the local army, and, as a set-off to this, India would be garrisoned by two armies raised in the same country and for the same purpose, but serving under different conditions with different interests, a system which must work unsatisfactorily by causing mutual jealousies. The proportion of the two forces would have to be balanced so as to prevent a preponderance of influence on one side, by making the forces equal in strength and giving no undue share of advantage to one more than to the other. For if the local army was inferior in numbers to the line it would soon sink into a second-rate force.

It is impossible to omit mentioning a reason which has been given for the maintenance of a double force, as it shows to what extremes the advocates of a local army were reduced to find arguments to support their opinions. Adverting to the manifestation of discontent shown by the local army, the Report of the Political and Military Committee of the Council of India actually urged the circumstances

connected therewith as an argument for the maintenance of a mixe European force. "Questions will arise," the Report runs, "in future in which the European soldiers may imagine that their advantage and interest are at variance with the measures of Government, and it is most desirable that the soldiery in discussing a supposed grievance should not be able to count on the sympathy and support of their whole body, and, on the other hand, that the Government should have the opportunity of using one part of the European Army as a check upon the other."

It is astonishing how such an argument could have been advanced by such distinguished men as those forming the Committee from whose Report the above is taken. If it means anything it is equivalent to saying that the safety of India is to depend on our using one half of our Army against the other. But the argument refutes itself.

But even allowing that the arguments in this paper have been unduly strained, that evidence in favour of a local army has been suppressed, and that the conclusions are against the weight of the evidence, we would still hesitate to alter the existing system and to violently upset the present order of things.

"India," said Sir Vincent Eyre, when speaking at the Institution in 1867, "is a dangerous country in which to be perpetually trying new experiments;" and what experiment could be wilder that to revolutionize the Army which holds our distant Indian Empire? But how is it to be effected? It is one thing to elaborate a scheme in the Cabinet and another to apply it in practice. The one is a harmless diversion, the other may cause the loss of an Empire. The answer to this, it is believed, must be a practical one, it is one that must not involve an entire reorganization of the Army at home and abroad—nor throw all the existing machinery out of gear.

A little more than ten years ago three and a half millions were sanctioned by Parliament for the construction of barracks and the elaboration of the details of the Localization Act of 1872. It is practically impossible to ignore this and return to the old depôt battalions. The brigade depôts must be accepted as the machinery for raising recruits for a local army, for to employ other means would be to throw everything again into the chaos and confusion from which it is just emerging. Assuming, then, that the organization of the Home Army remains the same as at present, there are two ways in which a scheme for localization may be carried out—either by taking the present garrison of India, and declaring it with a stroke of the pen a local army, in which case the men and Officers would have to be given the option of coming home or re-engaging under the new conditions, or by gradually effecting the change. It is difficult to say which would be the most disastrous, and whatever the ultimate effect, both would for a time disorganize the Army, and cause in all ranks a great deal of discontent, to the detriment of discipline and the ruination of *esprit de corps*.

In the first case there would be an immense expense incurred by men and Officers taking advantage of the altered conditions to demand their return to England, besides which there would be the cost, to say

nothing of the difficulty of replacing them. In the second, suppose it to be arranged under the most favourable circumstances, that is to say, the Army remaining as regards terms of service under exactly the same conditions as at present, so that no man nor Officer in theory would suffer by the change. Practically, how would this work? In the infantry, the Officers on completion of, say, five years' service in the country, might be transferred to the home battalions, but this would not be possible in a cavalry regiment with only a depôt troop at home, it would therefore be necessary to reorganize the cavalry before localization could be universally introduced into India, nor would it be possible in the case of an infantry regiment with both line battalions abroad. Besides this, all men and Officers of battalions within four years of returning home would have a just grievance in finding their regiment located in India, and themselves obliged to stay a certain time in the country when they had counted on, and perhaps even exchanged, to return to England. Of course the answer to this is that the individual must suffer for the good of the Service, and to this we can only say to those that recommend the change:—Take care that it is for the good of the Service, for no army can be in a high state of discipline that is not both contented and happy.

Having followed the arguments already set forth in this paper, the reader is probably thinking that he has heard a good deal more against the localization system than he has in favour of the relief system, which he may possibly hold responsible in some indirect manner for any existing imperfections in the state of the Army of India.

To prevent any doubt on this score we will at once show that the relief system is in no way responsible for the present state of affairs. The real cause is the introduction of short service, which, in its pure and simple form, is equally inapplicable to the Indian Army, whether engrafted on the local or relief systems.

A few figures will put this in a clearer light. In 1873, 6,417 men[1] were brought home from India, being an average of 110 per thousand, of these 52 per thousand returned in regiments, leaving 58 per thousand returning in detachments. Of these latter 39·13 per thousand were invalids, so that only about 18 per thousand returned in detachments as time-expired men, which shows that the real reliefs of time-expired men were carried out by the regiments whose ranks, when their time came to return to England, were nearly entirely filled by old soldiers.

In 1883, under the new system, 13,282 men returned home, being an average of 225 men per thousand, or just double what it was ten years before.

Owing probably to the great strain on the transport service, only one regiment (10 per thousand) was brought home, that is to say, the relief system is only responsible for 10 out of 225 per thousand sent to England.

Taking the number of invalids at 40 per thousand, the actual number of time-expired men amounts to 175 per thousand.

[1] This is above the average under the old system. In 1871, 5,608, and in 1872, 5802, were sent home.

It is scarcely conceivable that any army, much less one serving under such peculiarly trying conditions as the Army of India, could suffer such wholesale depletion, nearly a quarter of its strength every year, and at the same time retain its efficiency.

It is therefore not merely a question of expense of transport, it is one of vital importance, in that our hold on India depends entirely on the efficiency of its European army. But unfortunately the evil is not confined to India, the drafts on the home battalions are so large as to injuriously affect them also. Seeing, therefore, by experience, the impossibility of combining (with battalions at their present home strength) short service, as it is understood on the Continent, with one-third of our Army in India, it behoves us to steer a middle course, so as neither to sacrifice the Army to the Reserve, nor the Reserve to the Army, in fact, in avoiding the Scylla of short service take heed lest we drift into the Charybdis of long service.

A good deal has already been done to modify the original short service scheme. As early as 1875 the Indian Government foresaw the difficulty of obtaining the necessary drafts from the home battalions, and a Committee was appointed, presided over by Lord Cadogan, to consider the question of the modification of the short service system to meet the requirements of India. The result of their labours was to recommend that soldiers for India should be allowed to re-engage to complete 12 years, and that men should be permitted to complete 9 or 12 years' service, at any time after landing in India, and that all 12 years' men for India should serve 6 years in the Reserve.

These recommendations remained a dead letter till 1878, when a Special Army Circular was issued, allowing men who had completed three years' service, and who were under orders for India, to prolong their service to nine years, on the understanding that on their battalions being ordered home they would be liable to transfer to another corps to complete the extended period in India.

This arrangement, which restricted the declaration of extension of service to a time prior to a man's embarkation, a time when he is least likely to re-engage, was quite inadequate, and only a few hundred men took advantage of it.

In July, 1881, Army service was lengthened to 7 years with the colours and 5 years in the Reserve, or 8 years with the colours, if the Army service terminated abroad, and 4 years with the Reserve, and only a few months ago, to meet the increased length of service with the colours, an increased length of service with the Reserve was authorized.

The First Class Army Reserve consists now of two Divisions, the men of the Second not being liable to be called out on permanent service until directions shall have been given for calling out the whole of the First Division. The Second Division of the Reserve consists of men of good character, who, having completed their first period of limited engagement (12 years), enlist for four more years. The men are paid 4*d.* a-day, but get no deferred pay.

Omitting the re-engagements of men who enlisted prior to 1870, it

will be seen from the following table that up to 1882 very few men, enlisted for short service, have re-engaged or extended their service.

Date.	Numbers of men under Act of 1871 who have extended their time.		Total.
	For 12 years.	For less than 12 years.	
1874.....	6	..	6
1875.....	135	..	135
1876.....	375	..	375
1877.....	849	..	849
1878.....	871	..	871
1879.....	767	197	964
1880.....	649	188	837
1881.....	479	265	744
1882.....	672	442	1,114
1883.....	2,485	6,048	8,533

In 1883 an Army Circular authorized a gratuity of 2*l.* to men who had completed 3 years' service with the colours, and whose battalion was serving or about to serve in India, to extend their service to 12 years, and in July of the same year the Indian Government, which had in 1882 offered, with scarcely any result, 50 rupees, increased it to 120 rupees to men who were willing to extend their service with the colours to 10 years, the difference (70 rupees) only being given to those who had already extended their service for 2 years.

Such large bounties naturally produced the desired effect, over 2,000 men extended their service to 12 years with the colours, and 6,000 men to 10 years. Large as the bounty is, there can be no doubt that it will prove a great saving to the Indian Government. 72,500*l.* represents the value of about 800 recruits, whereas, supposing these men that have prolonged their service average three more years' service in the country, the cost of each soldier is only increased 4*l.* per annum, or supposing them to complete an average of eight years' service in India, it is merely an increase to their pay of 30*s.* a-year.

It will not be out of place here to say a few words on the subject of bounties. Undoubtedly nothing can have been worse than the system of giving them on enlistment. It should only be resorted to in cases of dire necessity; because in opening up an exceedingly lucrative profession to a lot of worthless rogues, it acts as a direct premium on desertion. The giving of bounties on re-engagement or on extension of service is a very different affair. In this case we get our money's worth; the man is of assured character, whose services can be depended on, and, which is important to remember, has already given a number of years' service to the State.

Table V[1] has been compiled with a view to showing the annual cost of a soldier serving for different periods in India.

[1] Page 335.

The cost of a soldier[1] during his first year, his passage-money to and from India, and to and from the port of embarkation is the same, whether the man spends one year or ten years in India; and consequently the longer he serves in the country the less will be the annual charge on this head, and consequently the less will be the average annual cost of the soldier to the Indian Government.

It will be seen that a man quitting India at the end of five years' service has, including his passage-money home, cost the Government 49*l.* 12*s.* a year, whilst a man leaving at the end of eight years has only cost 45*l.* 12*s.* per annum.

A man may therefore be given a bounty of 32*l.* at the end of his fifth year of service to prolong his service to eight years without costing anything more per annum at the end of his eighth year than he costs at the end of his fifth year. Thus:—

	£	*s.*		£	*s.*	£	*s.*
8 years at	49	12	.....			396	16
8 ,,	45	12	....	364	16	396	16
Bounty	32	0	....	32	0		

Apply this to the 6,000 men who have recently been given bounties of 12*l.* to prolong this term of service to ten years.

Had they gone home on the completion of their sixth year of service, they would each have cost 47*l.* 16*s.* per annum during their stay in the country. Supposing they now complete an average of nine years each with the colours in India, they will each have cost 44*l.* 17*s.* per annum, or a reduction of about 3*l.* a year for nine years. Had these men therefore been given 27*l.* each instead of 12*l.*, they would have cost the same rate at the end of their ninth as at their sixth year. As it is, the average cost of each man per year will be—

	£	*s.*		£	*s.*	*d.*
9 years at	44	17	=	404	0	0
Bounty	.....			12	0	0
			9)	416	0	0
Average cost per annum				46	4	6

which is the average cost of a man serving over seven years in India.

It would, therefore, under these circumstances, have been cheaper to have brought out fresh recruits only if it could be guaranteed that they would remain over seven years in the country, which would of course be an impossible average with men enlisted only for eight years. The Government, therefore, made a remarkably good bargain.

Another point this table brings out is the ruinous cost of men staying only a short time in the country. A man serving for three years

[1] See Table IV, page 335.

in India costs 11*l.* more per annum than a man serving eight years, and is possibly not half so efficient; while as the length of service becomes greater the difference becomes less: for instance, a man serving eight years is only 2*l.* 4*s.* cheaper per annum than one serving six years. The bearing of this is important on the question of the shortest period for which it is worth while to send a soldier to India. The Indian Government is of opinion that eight years is the shortest time, while the home authorities are said to consider six years as sufficiently long to justify the expense.

The saving on keeping men eight instead of six years in the country appears to be 132,000*l.* per annum, viz.:—

	£
60,000 men at 47*l.* 16*s.* per annum .... (*i.e.*, six years in India)	2,868,000
60,000 men at 45*l.* 12*s.* per annum .... (*i.e.*, eight years in India)	2,736,000
Saving	132,000

Turning to the Annual Return of the Army for 1883, there were 16,158 long-service men in India, of whom 8,531 were in their first period of service. There were also 32,136 men serving on their original short service engagement, some 6,500 who had extended their service to 10 years, and 2,000 to 12 years.

As the enlistment for seven years was only introduced in 1881, 17,000 of the short-service men were enlisted for six years; and it is for this reason that so much stress was laid on the economy in offering bounties to men who have been a short time in the country to extend their service.

The proposal we are about to make for the better working of the present system is not one of a very radical nature, because it is believed that no radical change is necessary. Already there have been modifications made in the short-service system, of which the Army cannot for some years feel the advantage. The advantage of the lengthening of the service with the colours will not make itself felt before 1887; the Supplemental Army and Militia Reserves will be incomplete till 1888. But while making due allowance for these facts, it is believed that the service with the colours must be lengthened by at least a year; that is, eight years with the colours and four with the reserve, unless the soldier's service expires abroad, when he must serve nine years with the colours and three with the Reserve.

But as the increase in the length of service will considerably reduce the strength of the Reserve, it is proposed to compensate for this by making entry into the present Supplementary Reserve compulsory. Thus the terms of service would be for 75 per cent. of the Army eight years with the colours and eight years with the Reserve, or nine years with the colours and seven years with the Reserve if the man's service terminated abroad, and for 25 per cent. long service and pension. The Reserve[1] might further be increased by, as at

[1] The actuarial calculation for maximum reserve with eight years with the

present, allowing men at home to convert the unexpired portion of their eight years' service with the colours into Reserve service. This would make the Reserve about 25,000 strong, and, together with the Militia Reserve numbering 30,000 (which will be considerably increased by the recent Army Circular authorizing the formation of a Militia Supplementary Reserve), will give us a reserve of 60,000 men to fall back on.

Last year 25 per cent. of the men forming the Army of India were long-service men, and the loss from all sources was 20 per cent.;[1] but as the bulk of the discharged men were six-year men, it is only fair to allow that had they been eight- or nine-year men, the percentage of loss would have been less. How much less it is impossible to say; but probably 3 per cent. at least, equivalent to a loss of 17 per cent.

The loss of the Army of India, constituted as proposed in this paper, would be as follows:—

45,000 short-service men	at	170	per	1,000	....	7,650
15,000 long „	„	110[2]	„		....	1,650
Total men required per annum					..	9,300

Supposing the reliefs of regiments and batteries to be carried out every 15 years, 4,000 of this number would go out with their corps, and the remaining 5,300 in detachments, making the total annual relief 15½[3] per cent. of the entire Indian Army.

It is not the intention here to go into any detail, but only to indicate the broad principles on which it is believed the relief system must be worked, for it is considered that a simple declaration in favour of it, without any proposal for its practical working, though perhaps in accordance with the letter, would not be in keeping with the spirit of the question which is before us.

The simple remedy which has been proposed is, it is believed, the best to adopt, because it lends itself better than any other conditions of service to the principle of keeping the Army *as young as is compatible with efficiency*. With enlistment for eight or practically nine years in India, the soldier going out with two or three years' service can be retained sufficiently long in the country to justify the expense of his transit; while a soldier of one year's service will not be retained beyond the limit of eight years, which is the maximum time the average man can be expected to remain in the country without injury to his constitution.

The required number of recruits being less, the physique, and con-

colours and eight years in the reserve is 30,000. Two-thirds of this have been assumed in order to be on the safe side.

[1] 11,700 men were dispatched to India in 1883.

[2] See above, for percentage of loss in long-service army.

[3] In 1877-78 the loss of the regular infantry was 16½ per cent. of its entire strength, while still more than one-third of the men who were serving had enlisted previous to 1870. It may, therefore, be expected that the casualties will amount to 20 per cent. on the present system when short service (*i.e.*, six years with the colours) has become more general. "Army Reorganization Report, 1881." This is indirect evidence of the accuracy of the above calculation.

sequently the discipline of the Army, will improve. The reduction in strength of the yearly drafts will be favourable to the composition of the home battalion, and will bring to a manageable quantity the numbers which have to be annually transported to India.

While it is believed that the lengthening of the service is really necessary, it is not pretended there is no alternative course. The effect of the seven years' enlistment has not yet been felt, but when it is in full operation it will diminish the present difficulties, and may itself be assisted by giving bounties to men to prolong their service to nine or ten years.

Although this has been shown to be more economical than allowing the men to return home and be replaced by recruits, it is not a principle which can be advocated except to meet an emergency, for it is, at best, but a hand-to-mouth way of providing for difficulties which may be met in a straightforward manner.

It has been our endeavour throughout this essay to weigh in an even balance the question of a local army against one conducted on the relief system, to sift the experience gained from both systems, and to determine the conditions of service most favourable to the European soldier in India, in order to apply them in turn to both systems, with a view to ascertaining which system lends itself best to those conditions, and it must be confessed that we find a verdict in favour of the relief system, save and except on the one count of expense.

But even from a financial point of view, the cheapest is not that which costs the least money, but that which is most efficient at the price India can afford to pay for her national insurance.

Her military expenditure is not advancing by such leaps and bounds as to cause any apprehension, or to warrant any radical change of an experimental nature in the organization of the Army merely to effect a small saving.

Before the Mutiny, the annual cost of the Army stood at 11,000,000*l.*, rose for a short time after it to 25,000,000*l.*, and now amounts to 17,200,000*l.* a year.

But the saving effected by the local system is too small to throw on the relief system the burden of proof of its superiority—it is, on the contrary, incumbent on the local system to show in what manner it excels, and to the question, "Has it succeeded in doing this?" we unhesitatingly answer No.

TABLE I.

Return showing the Strength of the E.I.C. Army (European) from 1852 *to* 1857, *the number of Recruits raised between* 1850 *and* 1859, *and the Strength of the Drafts embarked from* 1851 *to* 1858.

	Strength of E.I. Company's Army.						Local drafts embarked for India.				Total number of recruits enlisted in Great Britain and Ireland for Line, Guards, &c.	Remarks on recruiting for E.I. Company's Army.
	Artillery.		Infantry.		Total all arms.	Total number of recruits enlisted.	Artillery and Engineers.	Cavalry.	Infantry.	Total.		
	Horse.	Foot.	Regts.	Total all ranks.								
1850...	...	...	...	...	...	1,296	...	...	...	...	4,647 } ft. in.	31 | 1 | 51. Recruiting for infantry suspended. 20 | 6 | 51. Restricted for artillery to 20 per month from each district. 24 Dec. Restrictions removed.
1851...	...	...	...	...	...	573	632	...	232	864	6,237 } 5 6½	
1852...	1,990	5,173	6	6,089	13,252	1,305	648	...	379	1,027	9,142 } 5 6	22 Mar. '52. Recruiting limited to 2 artillery and 8 infantry from each district per month. 23 Sept. Limited to 10 artillery and 4 infantry from each district per month.
1853...	2,035	5,716		6,140	13,891	2,365	751	...	1,522	2,273	8,715 }	Restrictions removed from artillery on 13 Jan. '53; infantry increased to 10 per district per month. 23 Jan. Infantry restrictions removed. 8 Sept. Infantry standard reduced to 5 ft. 5½ ins.
1854...	1,977	5,171	9	6,335	13,483	2,364	552	...	1,504	2,056	31,620 5 4	1 Nov. '54. No restrictions; bounty raised to 6*l*.
1855...	2,011	4,872	9	7,527	14,410	1,852	477	...	1,176	1,653	32,119 5 5	Feb. '55. No restrictions; bounty raised to 7*l*. and then 8*l*.
1856...	1,974	4,725	9	8,115	14,814	2,100	619	...	946	1,565	9,998 } 5 6	May '56. Bounty reduced to 2*l*. and free kit. 15 Aug. Infantry standard raised to 5 ft. 6 in.; 20 per month from each district. 4 Oct. Artillery recruiting suspended. 4 Dec. 10 artillery and 10 infantry per month per district.
1857...	2,029	4,390	9	8,103	14,522	3,681	1,383	814	1,519	3,716	22,864 }	13 Mar. '57. Artillery unlimited. 4 June. Infantry unlimited. In Oct. Infantry standard 5 ft. 4 ins. Cavalry recruiting ordered 5 ft. to 5 ft. 4 in., and raised in Dec. to 5 ft. 4 in., and infantry to 5 ft. 6 ins., and cavalry limited to 60 per month from each district.
1858...	...	...	...	...	...	6,631	801	2,515	1,833	5,149	42,470 } 5 3	Feb. '58. Bounty raised to 3*l*. and free kit. 23 April. Infantry reduced to 5 ft. 3 ins., and cavalry restricted to 20 per month per district. Aug. New recruiting district established at York. Cavalry restricted to 5 per month per district, and standard raised from 5 ft. 3 ins. to 5 ft. 4 ins. July. Artillery standard reduced to 5 ft. 5 in.
1859...	...	...	...	...	...	1,513[1]	...	...	...	...	28,068 }	
Total	...	...	...	...	84,372	23,860 2,965destrs 20,895	5,863	3,329	9,111	18,303		

[1] To 30th April, 1859.

TABLE II.—*Returns of Numbers of Non-Commissioned Officers and Men despatched to and brought from India during the Years* 1873–83.

Year.	Strength in India.	Numbers sent home.			Numbers sent to India.			Total sent to and brought home from India.
		In regiments and batteries.	In detachments.	Total.	In regiments and batteries.	In detachments.	Total.	
1873	58,724	3,078	3,339	6,417	3,839	3,481	7,320	13,737
1874	58,669	2,932	3,571	6,503	4,875	3,664	8,539	15,042
1875	59,547	3,708	3,707	7,415	4,975	2,694	7,669	15,084
1876	58,013	3,251	4,848	8,099	5,363	3,375	8,738	16,837
1877	56,575	3,282	4,841	8,123	4,264	4,856	9,120	17,243
1878	56,340	3,208	5,388	8,596	4,931	5,297	10,228	18,824
1879	49,537	3,366	5,650	9,016	4,658	9,840	14,498	23,514
1880	50,136	3,325	6,279	9,604	9,274	6,153	15,427	25,031
1881	58,588	5,139	7,816	12,955	1,461	6,229	7,690	20,645
1882	62,705	4,363	5,205	9,568	3,635	7,074	10,709	20,277
1883	58,915	617	12,665	13,282	1,750	9,949	11,699	24,981
11 years	627,749	36,269	63,309	99,578	49,025	62,612	111,637	211,215
Average 1873-83	57,068	3,297	5,755	9,052	4,456	5,692	10,149	19,201

TABLE III.—*Average Length of Service of Men composing the Regiments sent to South Africa in* 1879.

Years' service.	21st Regiment.	58th Regiment.	60th Rifles.	91st Highlanders.	94th Regiment.	Total.	Average.	Average less 25 per cent. long service.	Number of years to pass in India before expiration of engagement.
6 years and upwards .	194	321	255	149	161	1,080			
5 and under 6 years..	23	32	81	13	21	170	294	220	3
4 and under 5 years..	30	22	66	56	46	220			
3 and under 4 years..	32	57	69	26	72	256	51	39	4
2 and under 3 years..	64	167	190	90	84	595	119	89	5
1 and under 2 years..	240	241	153	299	276	1209	241	181	6
Under 1 year	305	44	75	260	221	905	181	136	7
	888	884	889	893	881	4,435	886	665	

It is assumed no man will be embarked for India if within three years of the expiration of his engagement.

TABLE IV.—*Estimated Cost of an Infantry Soldier in his First and Second Years of Service.*

Charge.	Infantry of the line.	
	First year.	Second year.
	£ s. d.	£ s. d.
Regimental pay	18 5 0	18 5 0
Deferred pay	3 0 10	3 0 10
Rations	10 5 4	10 5 4
Fuel and light	0 10 4	0 10 4
Furniture, washing	1 0 0	1 0 0
Clothing	3 0 0	3 0 0
Arms	0 4 6	0 4 6
Accoutrements	0 3 5	0 3 5
Ammunition	0 8 3	0 8 3
Medical charges	2 0 0	2 0 0
Levy money	1 7 6	—
Free kit	1 7 6	—
Depôt expenses[1]	14 5 0	—
Conveyance as recruit	1 0 0	—
	56 17 8	38 17 8

TABLE V.—*Table showing the Annual Cost of a Soldier to the Indian Government at the different Periods of his Service in the Country.*

Years of service on returning to England.	Cost at the end of the several years' service in India.	Transport to and from India and ports of embarkation.	Total charge at the end of each year's service.	Average cost of the soldier per annum.
	£	£	£	£ s.
1st year	57	35	92	92 0
2nd year	96	„	131	65 10
3rd „	135	„	170	56 13
4th „	174	„	209	52 5
5th „	213	„	248	49 12
6th „	252	„	287	47 16
7th „	291	„	326	46 11
8th „	330	„	365	45 12
9th „	369	„	404	44 17
10th „	408	„	443	44 6
11th „	447	„	482	43 16
12th „	486	„	521	43 8
21st „	837	„	872	41 10

[1] Based on the charge against the Indian Government on account of Brigade Depôts.

ESSAY.[1]

SHOULD THE EUROPEAN ARMY IN INDIA CONTINUE AS AT PRESENT CONSTITUTED, OR SHOULD IT BE CONVERTED IN WHOLE OR IN PART INTO A LOCAL FORCE?

By Major M. J. KING-HARMAN, Bengal Staff Corps.

"Prepare."

I MAY commence, I think, by assuming that it is the duty and the desire of our Government to maintain in India such a force of British troops as shall be adequate for the preservation of the internal tranquillity of that vast country, and at the same time shall be capable of furnishing for the field such army or armies as shall be sufficient for the defence of British territory and British allies against every enemy to whose attacks they may be exposed.

Englishmen have their own peculiar ways of doing things, and one of the most curious of these is a disinclination, almost amounting to actual repugnance, to fully prepare beforehand for the future; and it seems almost hopeless to think of changing what may be called our national custom in that respect; but nevertheless, I hold it to be the bounden duty of every one to try his best to do so; and doubtless the Council of the R.U.S. Institution had some such idea in their mind's eye when they gave the above question as the subject for the Essay for the present year.

It is also a fashion intensely English to lock the door after the horse has been stolen; we are always moralizing and discovering the cause of the result after the game is played, but somehow or other we never seem to commence by doing what we know—or ought to know—is right; nor do we ever pay attention to any warnings, nor learn from the experience of ourselves or others.

"As the wisdom of every man, however able, can but run through the channels that are formed by the soil of the character," so our leaders, with all their talents, never appear to possess the prudence which fear of consequences inspires, and which would seem to the ordinary mind ought to be one of the chief qualities of those who sway the destinies of an essentially mercantile nation possessed of a small and scattered army, and a large extent of territory in different parts of the globe.

It must always be borne in mind that we are not a military nation, and that our resources of men are limited, the great body of the population being otherwise employed; yet we are almost constantly

[1] These Essays are printed in the order in which they were mentioned in the Report of the Referees.—ED.

engaged in fighting somewhere: one day it is in Afghanistan, another day it is in Egypt, and a third day it is in West or South Africa; and there does not appear to be any reason why we should not some day be obliged to fight in all three places at once, but on the contrary, the course of events seems to be tending in that direction; therefore I say we should so prepare beforehand while there is time, that when the day of trial comes, we may be able to carry all before us with a rush.

Viceroys, War Ministers, and eminent authorities have busied themselves from time to time with the reform of the army in India, holding councils, taking evidence, and proposing schemes for its better organization; and yet the matter seems to be as far off settlement as ever it was. Surely the late Lord Lytton was right when he wrote in one of his famous novels, "There is a sanguineness in men of great intellect which often leads them into follies avoided by the dull," and which, I might add, causes them to disregard the advice of others, especially when it takes the form of a warning.

The subject for the Essay is put in the form of a question, which naturally, I think, leads to another, which I will give in the following words:—

"What do you want that army to do, and what duties must it be prepared to perform?"

If, as some people tell us, it is a fact that India is perfectly quiet, the semi-independent native princes and chiefs all staunch and loyal, and that a wise and vigorous foreign policy has completely secured the country from any chance of being attacked by other nations, then by all means let the European army there continue as at present constituted, and keep it at the lowest possible strength that will suffice for ordinary garrison duties, so as to keep down the expense and the waste as much as possible; but if, on the contrary, as others affirm, and as I believe, the state of affairs within our boundaries is not by any means as satisfactory as could be desired, whilst nearly the whole length of our frontier remains absolutely open and undefended, and liable to be broken through by any or all of the turbulent warlike tribes who hold the mountains and passes beyond; and whilst at the same time we see the steady advance of Russia's daily increasing army towards the weakest, though slightly defended part of that frontier, then I maintain that not only must the constitution of our European army in that country be completely changed, but that that army must also be considerably increased.

Of course it is well known that there are people who, in their combined vanity and ignorance, are capable of saying anything that is absurd, and unfortunately it is only too true that there are also large numbers who, chiefly through apathy and ignorance, but partly through perversity, will believe almost any absurdity that is told to them; such people will listen to no arguments against their pet ideas, and they constitute the majority of those who believe one of two things, either that our hold on India is so perfectly secure that we have nothing to fear from any one, or that our position in that country is that of a tyrannical usurper, and from a moral point of

view is so utterly indefensible that we ought at once to hand it over to the natives and withdraw our civil administrators and our army. Fortunately they, at present, constitute a very small portion of the British nation, and therefore I do not think that I should be justified in devoting much time or space to considering them or their peculiar ideas.

So much has been written of late years in the military journals and magazines, &c., regarding the defences of India that it would be almost impossible for any one writing an essay now on the same subject to avoid repeating what others have previously said or written, and as I have always carefully studied all such sayings and writings I shall doubtless be considered a special sinner in that respect, if indeed the repetition of what one knows or believes to be right and correct can properly be called a sin.

In any reconstruction of troops for the permanent maintenance of our rule in India, two points should be kept steadily in view—efficiency and economy.

In India we require an army to protect the country from foreign enemies; it must not only be sufficient to repel invaders, but it must be exhibited in a state of preparation to deter from attack and ensure respect, to give political influence beyond the frontiers, and to keep up the prestige as well as the reality of power; it is absolutely necessary that we should awe the nations *on* our frontiers, and maintain our prestige *everywhere*, by making such a demonstration of our power to meet every emergency. We require an army to suppress insurrections and sudden commotions, to awe the disaffected, and give confidence to the well-disposed within our borders, to support our civil authorities in administering law and justice, to command the respect of our subjects and allies, and preserve them in obedience and alliance by the conviction of the hopelessness of any resistance, so that the turbulent, the refractory, and the ambitious may cease in despair to entertain designs injurious to the public peace and subversive of established order.

Many of our eminent public men have believed, and still believe, that the greatest danger that India will ever have to face will come from within our own borders at a time, probably, when an enemy from without is menacing her frontiers; for the Oriental mind is so impressed by the force of example that a single defeat on any of the lines of approach might be the signal for a revolt on the part of some of the semi-independent princes (who are allowed to maintain considerable armed forces), which would soon spread throughout the country; and it is well known that the famous General Scobeleff always counted on receiving considerable assistance in that manner.

Many regard a Russian invasion, or, what amounts to the same thing, an invasion instigated and headed by Russia, as an imminent, not a remote crisis, and there can be little doubt to the majority of intelligent Englishmen, and there is none whatever in my mind, that the rapid and systematic advance of Russia towards Herat is a serious menace to our Indian Empire. The final grand move will be made whenever they have completed all their preparations, and not one day earlier.

Sir John Malcolm once remarked that in an empire like India we are always in danger, and it is impossible to conjecture the form in which it may approach.

There has been certainly a steadily, but very slowly increasing interest in Indian affairs on the part of Englishmen in England, but still India is comparatively little known or cared for. Tourists of all sorts go there, it is true, and spend a few of the pleasant winter months in sight-seeing, and shooting, or in search of information; but they all return with very hazy ideas of the country, particularly those whose sole object is to inquire into the grievances of a people with whose language, manners, and customs they are utterly unacquainted, for they, almost without exception, start with fixed ideas in their heads, and the astute Orientals very soon find that out and take good care that nothing shall be told to them that will tend to remove those ideas, no matter how absurd they may be; hence it is that the British public is occasionally treated to long articles in our leading periodicals which only prove the ignorance, egotism, and prejudice of the writers. An Indian question is still often called the "dinner bell" of Parliament, and most culpable ignorance and indifference to Indian affairs prevails generally throughout the United Kingdom; in fact, we still live very much in a region of theory, and England as a nation knows so little regarding the real state of India, and is so little inclined to take any trouble to learn it, that, grateful to those who will take that trouble for her, she receives as truth and without examination whatever statements are laid before her, and too frequently praises or condemns as those praise or condemn whose authority she bows to, whose verdict she accepts. Such ignorance and apathy is unfair to herself and is most unworthy of a great nation.

The news that the country and people of Merv had passed over to Russia caused intense excitement and alarm throughout England for a time, and many people at once rushed to the conclusion that our Indian Empire was all but lost; but India's extremity is the reformer's opportunity, and therefore I do not think that any fitter time could have been chosen for discussing the condition of our British troops in that country than the present, for in my opinion the time has now come for us to decide whether we shall preserve that great and rich country for ourselves to be handed down intact to our posterity, or whether we shall allow Russia to tear it from us. We can no longer shut our eyes to two important facts which are now well known to the whole civilized world, one of which is that although India is the richest portion of our empire, yet she is undoubtedly the weakest, and the other is that Russia is steadily and systematically pushing her way southwards through Asia with the avowed object of either taking the country herself by sheer weight and force of numbers, or of assuming such a position as will oblige us to remain neutral when next she reopens the "Eastern question."

A poem may not have the same political value as a diplomatic document, but it may possess a deeper significance, so I make no apology for introducing here the English version of a Russian poem

on the proclamation of Her Majesty Queen Victoria as Empress of India in 1877:—

"The Eastern mind has strange prognostic drawn
Of dark dominions chased by northern star,
Which, as the herald of a promised dawn,
Shall signalize the reign of the White Tsar."

I forget the first part, but the whole translation was published in "Macmillan's Magazine" some time in 1877, and created some stir at the time.

No one can or will blame Russia; she has been pursuing a fixed definite policy all along, which she has never attempted to hide or disguise, and is pushing on steadily and surely in spite of her supposed financial difficulties and internal troubles, which, after all, are simply nothing when compared with our Irish troubles.

I find from the *Turkistan Gazette* of the 6th (18th) of December, 1883, that her average *yearly* dead loss from Turkistan during the last fourteen years has been 5,745,709 silver roubles! Why this enormous loss of money, unless she is feeling pretty sure of recouping herself hereafter?

She has conquered the Turcomans, a nation of soldiers, and is now engaged in forming them into regiments—for what purpose?

This reminds me of the last paragraph of the Institution Prize Essay of 1878,[1] by Captain J. Ross of Bladensburg, which seems almost prophetic; it runs thus: "But if an European nation be able to subdue the shepherd tribes of Central Asia, and with her trade to organize and arm them, she will then forge a gigantic weapon of offence and of conquest, one which will surpass that of Nebuchadnezzar, and by which she must become absolute mistress of the world. The dominion of power is *now* in the hands of England, but if she does not employ her strength, the sceptre of supremacy and the palm of pre-eminence in war must then infallibly fall into the hands of Russia."

We all know what has happened since those words were written; Russia has been steadily working on in a manner unheard of and unthought of before, while we, having retired from our commanding position at Kandahar, have been squabbling over domestic politics, and, ostrich-like with our faces buried in the sand of party strife, have pretended that we did not see our own danger, and tried to believe that no one else saw our extreme weakness.

An energetic policy a few years ago would have kept that formidable and aggressive Power at arm's length; but instead of that we have allowed her to come steadily on, and it is too late now to prevent her from coming nearer still and establishing herself in great force close to our very frontier, whilst at the same time nothing has been done to strengthen that frontier, or to increase the number or the efficiency of our British troops in India, although it is not denied that those troops constitute our only real strength; that is to say, the only portion of our army whose hearts are with us, *who cannot be tampered with*, and whose fidelity can be confidently relied upon in the hour of danger from an European foe.

[1] *Vide* Journal of the Institution, vol. xxi, page 375.

Although I am sounding an oft-repeated note of alarm, yet I hope no one will jump to the conclusion that I am running down the native portion of our Indian army; for I know them to be, as a rule, most brave and excellent soldiers, and I believe that as long as we maintain our prestige and are successful, so long will they remain faithful, and will shed their blood for us against all comers; but if once we suffer defeat from an invader, and are driven back from our frontier, then their belief in our invincibility, which is now universal, will be lost and their fidelity shaken. And we should remember that after all they are only mercenaries, and it would be absurd to blame them if they forsook us and took the side of the victors; therefore it is that I said that our whole *real* strength consists in the few British regiments that are scattered over that vast country, and which are not only, in my opinion, too few in number for the work that is or will be expected of them, but are at the same time invariably below their proper strength; to a great extent inferior in point of physique; in many instances quite unfit for any service at all, and constantly being changed.

Of course I am well aware that such plain speaking will be read with perfect horror by many people who consider the publication of such sentiments in a public—more especially in a military—journal to be impolitic and objectionable; but for my part I do not see what can be gained by mincing matters, and trying to deceive others by fair words which I know to be false; nor do I believe for an instant that any words of mine, however strong, could possibly hurt the feelings of a nation that never loses an opportunity to vilify us, and that seems to make promises and treaties with the sole object of breaking them at the first convenient opportunity.

A careful observer told us not long ago that "we can only protect our interests in India by showing clearly that we have the foresight to see where we are menaced, and the resolution to defend them if they are attacked;" and the truth of that statement is indisputable, but what is the use of resolution without a sufficient and an efficient army to back it up? And I maintain that our British army in India is neither sufficient nor efficient, and further, that it never can, nor will be so until it is converted "in whole" into a local force, in which the men are enlisted for long service and pensions, and which is not liable to be called away for service in other parts of the world.

In short, India *must* be self-reliant, for the simple reason that if ever that country be attacked, or even threatened with invasion by a European Power, we may be quite certain that somehow or other we shall be held in check in Europe, if not in England, and every possible endeavour will be made to hinder us from sending out reinforcements. I am only called on to deal with India in this paper, or I should like to include China, Ceylon, and other places, and so form a distinct Colonial army.

It may seem to the ordinary reader that I have taken a long time, and gone over a great deal of useless ground in arriving at my point; but so many people really believe that any sort of army will do for India, that I was anxious to show that such is not the case, but that on the

contrary we must have the largest and best army that can be provided, bearing in mind always that our military efficiency should at all times be limited by our financial means.

It may be objected that the proposal to maintain a separate local army for India is undesirable, inasmuch as the Service and the country both require rest after the numerous changes that have been introduced of late years; and doubtless if all, or indeed any, of those changes had been of the slightest benefit to India, there would have been some reason for the objection; but as, on the contrary, they have all worked to the harm of that country, as I shall endeavour to show, it is absolutely necessary that this one more change should be introduced at once,—you may call it by whatever name you please, but it must be a *special army for India*, and it must necessarily be composed of men who shall serve in that country for a fixed period of not less than twenty years.

It would seem as if we, or rather our rulers, never can realize the truth of the old saying, "Si vis pacem para bellum." Any one who knew India twenty years ago, and who knows the shortcomings of our troops in that country now, must stare with astonishment at the panegyrics of our Indian army which appear from time to time in the English Press. In a very few years hence, even if we are not actually at war, our forces in that country will be so divided in watching an enemy from without, and guarding against a foe that is within, and that will most certainly take advantage of our exterior embarrassments, that we shall have need of every man that we can muster there, and then we shall not have one man too many for our needs, even if all the regiments are up to their full strength of efficient fighting men. Surely then it is our duty to make use of the short time still before us to make our army in India as efficient as we possibly can.

We shall probably never be attacked in England so long as we maintain our prestige as a great naval Power, but we may be quite certain that the invasion of India *by land* is only a question of time, and, what is more, we shall have to meet it single-handed.

Before proceeding further with my subject, I think it will be interesting to glance briefly at the rise and progress of our British army in India, so far as can be gathered from Orme's and Broome's Histories, and from other authentic works; and I will then give the opinions of some of India's greatest statesmen and soldiers in proof that my proposition to establish and maintain a local army in and for that country is no new or fanciful idea, but is the result of careful study of what has gone before, as well as of what is going on now, and what the future may bring forth.

I will then touch on the financial and medical aspects of the question, and on the effects of the short service system; and will conclude with my own idea of what the British Army of India should be composed.

So silent are historians of British India regarding the rise and progress of the European and native armies in that country that it is almost impossible to trace its gradual growth, or to gather particulars

regarding the classes of men enlisted, or their pay, feeding, clothing, &c.; and there were so many clogs and hitches in the machinery that doubts must have been often entertained whether it would work at all. In the year 1652 the Mogul Government granted permission to the English to entertain an establishment of one Ensign and 30 men to do honour to the principal Agents, which little band may be looked upon as the nucleus of the Bengal army; and further on we learn that this force had amounted in 1683 to about 250 Europeans.

In 1685 an expedition was fitted out in England for a war against the Nawab of Dacca, consisting of ten ships of from 12 to 70 guns each, having on board six complete companies of infantry which were raised for the purpose; this force was afterwards joined by nine ships belonging to the East India Company with four more companies of infantry, making a complete infantry regiment of 1,000 men. The expedition failed to accomplish its object.

The first action fought against the natives of India was on the 28th October, 1686, at Hooghly, in which the British force of less than 500 men gained a complete victory and captured eleven guns.

In 1688 the Court of Directors sent out from England 160 more men under Captain Heath, and again in 1695 they sent out large reinforcements of English and Swiss soldiers, and also ordered the enlistment of Armenians and Caffres or Blacks; assigning as a reason for this step that *every recruit sent from England cost the Company* 30*l.*

The trade of the Company rapidly increased and more land was obtained, which necessitated a gradual increase in the military forces; so we find in 1741 a separate force at Bombay, consisting of one regiment (7 companies) of a total strength of

25 British Officers.
166 British non-commissioned officers.
26 Drummers.
319 European privates.
31 Half-castes.
900 Native Sepoys.

War with France in 1744 gave an impulse to the improvement of the army, after the example set by the French in India, and we find that in 1746 the Bombay force comprised one artillery company of 100 European gunners, and ten companies of European infantry, 70 men in each company, the pay of each private soldier being tenpence a day. On the 17th June, 1748, the Court of Directors addressed a circular letter to the three Presidencies, ordering a company of artillery to be formed at each, composed entirely of Europeans, on the model of those in the Royal Service, to consist of 5 Officers, 4 sergeants, 4 bombardiers, 2 drummers, and 100 gunners; and during that year a mixed body of Europeans and natives was raised in Madras for the protection of that settlement against the French; the Europeans were almost entirely supplied from and by the Company's ships. This force was gradually increased, and formed the principal part of the small army with which, in 1757, Clive retook

Calcutta, and won the glorious battle of Plassey; the troops under his command consisted of

The Bengal European Battalion, now the 101st Regiment
„ Madras „ „ „ 102nd „
„ Bombay „ „ „ 103rd „
„ Bengal Sepoy „ „ 1st Bengal Light Infantry
„ Madras „ „ and European Artillery,
making a total of

950 European infantry.
150 „ artillery.
2,100 Native infantry.
8 six-pounder field guns.
2 small howitzers.

In 1752 we find a company of Swiss infantry enlisted for service in Bombay under a Captain A. de Zeigle; and another for Bengal; but the experiment, though fairly tried, failed in both places, and before six months had elapsed 44 men of one company had died, and many had deserted to the French.

In 1754 the first regular regiment of the English army landed in India, the present 39th Regiment, and in February of the same year a Bill for extending the Mutiny Act to the East Indies was read in the House of Commons for the first time, and became law in the following month, under which Articles of War were framed which, with slight modifications, continued to guide the Service in the three Presidencies for many years; military matters were then put in proper train, and the Indian armies were arranged on established scientific principles under the direction of a Select Committee appointed for the purpose by the Court of Directors. In 1755 three companies of Royal Artillery were sent out to Bombay under command of Major Chalmers; and when in 1757 that place was threatened with invasion by the French, the garrison included 236 men of the Royal Artillery, 285 men of the Company's artillery, and 848 men of the Company's infantry, all of whom were Europeans. Then followed the establishment of a separate Bengal native army, supplemented by a small force of European artillery and infantry which in 1772 consisted of four companies of artillery and three battalions of infantry, in all about 3,500 men, and this was added to from time to time until we find that in 1786 it consisted of 36 battalions of Sepoys, and 6 battalions of European infantry, with several companies of artillery. The Europeans are in some places described as being the scourings of almost every nation, kidnapped and wheedled on board ship by crimps; but in all probability they were not nearly so bad as they were made out to be, and certainly they were real men who marched and fought splendidly. Meanwhile the Company's forces in Bombay and Madras were steadily increasing, and in 1772 the former included 2,500 European infantry, and the latter 3,000.

In the year 1758 three more regiments of the Royal army, the 79th, 84th, and 96th, were sent out from England to assist the Company's troops, but they were either very quickly brought home again, or

else they were broken up in India; for it seems that for some years there were no Royal troops in India until 1779, between which year and 1784 five new regiments of infantry and one of cavalry were raised in England for service in India and were sent out to Madras. Lord Cornwallis was Governor-General of India at that time, and it is worthy of note that *he was also appointed Commander-in-Chief of all the troops in the country.*

In the year 1788 four more regiments of infantry were raised in England by the East India Company, and sent out for service in India; and in 1794 the total strength of European troops in that country was 13,500 men. Meanwhile reforms were being introduced and existing evils eradicated, so that we find the army under Lord Lake, which was employed in almost constant fighting and marching from 1803 to 1806, was not only very highly disciplined, but was capable of performing marches, enduring fatigues, and gaining victories in a manner that has never been surpassed. Under the Marquis of Wellesley an increase was made in the numbers of the Royal troops, but the Company's European infantry was reduced to one regiment for each Presidency. This increase was specially made on account of the Mahratta war; but when the war was over, the force was somewhat reduced. However, in 1808 it (the Royal army) consisted of four regiments of cavalry and twenty battalions of infantry, besides the three battalions of European infantry belonging to the East India Company, making a total of 24,500 British troops in India altogether.

In 1840 a second, and in 1854 a third European regiment of infantry was added to the Company's army in each Presidency, whilst at the same time a great increase was made to the numbers of their British artillerymen.

In 1843 the strength of British troops in India was—

Royal.			£
Cavalry — 5 regiments;	173 Officers,	3,365 men, costing	190,840
Infantry—25 battalions;	994 „	24,096 „ „	860,666

East India Company.			£
Horse Artillery— 5 brigades;	115 Officers,	1,977 men, and 514 natives	costing 194,520
Foot „ —10 battalions;	190 „	4,134 men 1,515 native gunners 1,251 native drivers	costing 216,621
Infantry — 6 „	234 „	5,473 men	costing 161,313

In the year 1856, the year before the Mutiny, the British force in India consisted of

	Bengal.	Madras.	Bombay.	Total.
Royal Regiments of Cavalry ..	2	1	1	4
„ Battalions of Infantry ..	15	3	4	22
Company's „ „ ..	3	3	3	9

besides a large force of mounted and garrison artillery, making a total strength of about 45,000 men, of whom rather more than one-half belonged to the Royal army; but the pay of all was drawn from the revenues of India.

Each battalion of infantry had a nominal strength of 1,000 rank and file.

But there is the evidence of Major-General Balfour, that out of the establishment of 45,000 men, there were at the beginning of 1857 only 34,091 effective rank and file, of which 5,000 were on active service in Persia. The strength of the native army at that time was about 270,000 men.

In 1857 came the Mutiny, during which time the strength of the Royal troops was very much increased, and three regiments of European cavalry were added to the Company's army. After the Mutiny the question of the future number of British troops that should be always maintained in India was most seriously and impartially considered, and it was decided that the country *could never be really safe unless garrisoned by* 80,000 *British troops.* However, in a few years the lessons of the past were forgotten, the deliberate calculations of military necessity were ignored, and, the local army having ceased to exist in accordance with the Royal Warrant of the 16th January, 1861, and the whole country having been taken over from the East India Company, the British army there was reconstituted and was fixed at 11 regiments of cavalry and 52 battalions of infantry, with a large proportion of artillery, but the establishment of each regiment and battalion was much smaller than formerly.

Colonel (now Sir) H. W. Norman stated before the Select Committee on the Indian and Colonial Army in January, 1867, that the Indian *establishment* of British troops, exclusive of depôts, on the 1st October, 1886, was—

20 batteries of horse artillery	2,929 men
Field and garrison artillery	8,930 „
11 regiments of cavalry	5,069 „
52 battalions of infantry	44,744 „
Total	61,672 „

out of which there were 3,460 men deficient. Between 1857 and 1867 the British troops in India were actually increased by about 13,000 men, which does not seem excessive considering that all the artillery, except a few mountain batteries, were manned by British gunners and drivers, and that all forts and arsenals were, and still are, garrisoned by British troops, which was not the case formerly; at the same time there had been a reduction in the native troops of 107,000 men.

In 1884 the British troops in India consisted of

	Bengal.	Bombay.	Madras.	Total.
Horse Artillery Batteries	10	2	1	13
Light Field „	40	8	11	59
Heavy „ „	4	1	1	6
Mountain „	4	1	1	6
Garrison „	17	4	5	26
Regiments of Cavalry	6	2	1	9
Battalions of Infantry	32	9	9	50

If these were all complete in number they would amount to 2,487 Officers and 59,104 all other ranks; but although the numbers of Officers may be said to be complete, as all who are on furlough can be easily recalled, yet the numbers of the other ranks, that is to say, the actual fighting strength, is some thousands short of the establishment.

Two questions at once present themselves—

1. Why is it that 61,591 Officers and men are *now* considered sufficient for India, whereas in 1858 a force of 80,000 was considered to be absolutely necessary for the future garrison?

2. Why, supposing that our men nowadays are so superior to those of twenty-six years ago that we can do with such a small number —why, I say, is not that number provided?

Doubtless many absurd answers could and will be given to the first question, but there is only one to be given to the second.

I can find no statistics regarding recruiting for the East India Company's service previous to the year 1842, but it is a well-known fact that in former days when recruits were not forthcoming for the Royal army, they came forward, as many as were wanted for the Company's Indian army; and I think this will be apparent to any one who will take the trouble to study the Reports of the Recruiting Commission of 1866, and of several previous years. It was also pretty clearly shown by the fact that in 1858–59 occurred what was then called the "White Mutiny," when 10,000 English were sent home from India because they refused to be handed over like a flock of sheep to the Imperial army, and it must not be forgotten that this blunder cost England somewhat about a million sterling.

So popular was service in the Indian local army, owing to the pay, pensions, the prospects of rising and obtaining civil employ, and the probability of being able to send money home, that it was generally recognized by the authorities that the greater number of recruits raised in the United Kingdom, and certainly the pick of them, tried to get into it, and so for many years the Company's Officers were only allowed to recruit in London, but by degrees permission was extended to other places, until at last they were allowed to have seven depôts or establishments.

In April, 1858, a Return was compiled by the Military Secretary from which I gather the following information :—

The East India Company were specially permitted by Act of Parliament to raise recruits in England for their Indian armies, and the men so enlisted were subject to the provisions of the Mutiny Act whilst they remained in England. The Court of Directors appointed their own Officers and sergeants to enlist the men, and to enable them to do this, those Officers held commissions from the Sovereign, and the sergeants were regularly enlisted under the Annual Mutiny Act.

The whole of the recruiting was carried on under the provisions of the Annual Mutiny Act and Articles of War, and under the authorities of the Horse Guards; the rules laid down for the guidance of recruiting parties being applicable equally to the Royal and the Company's Officers, unless in any particular cases the latter are specially exempted.

From the year 1842 to 1845 inclusive, the East Indian Company raised recruits in five places, viz.: London, Liverpool, Dublin, Cork, and Edinburgh, during which time 4,333 were finally approved for the Service, of which 52 per cent. were supplied by London, 12 per cent. by Liverpool, 22 per cent. by the Irish districts, and 14 per cent. by Edinburgh.

In 1846 Bristol and Newry were added to the authorized centres, and from that date up to 1857 inclusive, 22,670 men were finally approved for the Service, of which number the London district supplied $26\frac{1}{2}$ per cent., Liverpool and Bristol $23\frac{1}{2}$ per cent., the Irish districts $35\frac{1}{4}$ per cent., and the Scotch $14\frac{3}{4}$ per cent.

The average total cost for each recruit was 8*l.* 12*s.* 8*d.*, which sum included levy money, pay and allowances of the district recruiting staff, Officers and sergeants, clothing for staff sergeants, travelling charges, and an allowance of 1*l.* 1*s.* to recruiting Officers for each recruit finally approved.

The permanent standard height for the Company's artillery was 5 feet 8 inches, and 5 feet 6 inches for the infantry, and the age was from twenty to twenty-five years; but on any sudden demand for any increased supply of men, the standard height has been slightly reduced, and the limit of age increased to thirty years.

The Company's depôt was at Warley, and there were 737 recruits there on the 31st March, 1858. The following table gives the number of recruits approved of for the East India Company for five years ending 1857:—

Year.	Artillery.	Cavalry.	Infantry.	Total.
1853	615	None.	1,750	2,365
1854	509	„	1,855	2,364
1855	477	„	1,375	1,852
1856	579	„	1,521	2,100
1857	1,148	1,077	1,692	3,917
Total ..	3,328	1,077	8,193	12,598

Between the 1st June and 1st December, 1859, there were 3,303

recruits embarked for service in the local European regiments and infantry, and on the 9th March, 1860, nearly a year before the amalgamation took place, there were 1,393 recruits at the depôts in England.

On the 12th April, 1813, Sir Thomas Munroe was called upon to give evidence in the House of Commons before a Select Committee, and one of the questions asked him ran as follows:—

"Would any advantage result from filling up the casualties in European regiments in India with recruits from Europe, instead of relieving entire regiments?"

To which he replied—

"I conceive that very great advantage would result from such a practice, because by sending out recruits only you have always veteran regiments; the recruits upon landing are thrown into old regiments who are acquainted with the mode of living in the country, and the recruit soon becomes a perfect soldier; by sending out entire regiments, however excellent the Officers may be, from their not being acquainted with the manners of the country and the modes of living, a corps upon its first arrival, and sometimes for one or two years afterwards, is quite inefficient if it is sent into the field, and is rather an incumbrance than an advantage to the army. There is likewise, by the system of sending out recruits instead of whole regiments, a considerable saving, not only in expense but likewise in the lives of men; for when regiments are sent out in a body, from their inexperience in the country and mode of living, a much greater proportion of them die than among those recruits who are thrown into old veteran regiments established in the country."

Sir Charles Metcalfe, one of the ablest and most experienced Statesmen who ever went to India, and who terminated his long and glorious career in that country by being the Governor-General of it, records his opinion on the proposed reduction of the Indian army in a most able minute dated Calcutta, 19th April, 1835, in which the following passage may be found:—

"If we recollect that when we want to send troops to meet external enemies, we need troops most at home, and when our force is carried out of our territories in time of war, it is most required within them, the argument which would lead us to disregard the necessity of being in a state to make rapid preparations to meet any emergency, appears to me to be most fallacious. The fact is that under no organization of our army can the preparation of regular troops be rapid enough; and it will always be a difficulty, when we enter into war, how to supply with sufficient celerity within our dominions any description of troops to be substituted for the preservation of order and tranquillity in lieu of those that must on the exigency be sent away."

All of which points to the absolute necessity of having the whole army in a perfectly efficient state, ready for immediate service against external foes, and to keep in subjection our own subjects as well as the semi-independent native States.

That cool-headed and most able Statesman, Sir Henry Lawrence, in one of his able essays written exactly forty years ago, tells us that

"at first sight bayonets and red coats do not appear to be precisely the instruments of government which a philanthropist would advocate, but we belie or deceive ourselves when we declare or fancy that our government (in India) is maintained otherwise than by the sword." And in another part of the same essay he says: "But it behoves us under every view of the case to keep up our strength. Debility, the result of apathy and negligence, would be nothing short of a state of crime: there are few national, as there are few bodily, ailments which have not their seat in debility, and any very apparent symptoms of weakness in the dominant power would, under the present circumstances, plunge the country into a state of terrible disorder, and gird about with desolation every province of Hindostan."

Such words require no comment from me: they speak for themselves; and they are as true and as applicable to-day as they were acknowledged by all to be then.

In 1856, Lord Dalhousie, then Governor-General of India, recommended officially that a fourth regiment of British infantry should be added to the Company's army in each Presidency.

Lord Canning, who succeeded him, proposed that the number of British troops in India should be 50,000, in the proportion of 3 local to 2 Imperial.

In Lord Dalhousie's celebrated minute of the 13th September, 1854 I find the following:—

"Although the war with Russia does not directly affect our Indian dominions, yet it is unquestionably exercising at this moment a most material influence upon the minds of the people over whom we rule, and upon the feelings of the nations by which we are surrounded; and thus it is tending indirectly to affect the strength and the stability of our power.

"The authorities in England cannot, I think, be aware of the exaggerated estimate of the power of Russia which has been formed by the people of India. I was myself unaware of it until the events of the past year have forced it upon my convictions.

"But it must be borne in mind that India has to play her own part in this contest, and that, unlike Canada and the Colonies of the Crown, she is in close proximity to some of those Powers over which the influence is supposed to extend; that though the war does not directly affect her now, yet she is already affected indirectly by the feelings to which the war has given rise; and that it is at least possible that those feelings may be quickened into hostile action which she will then be called upon to meet by force of arms."

It is true that those exaggerated ideas of the power of Russia died away after the Crimean War to a great extent, but of late years they have been revived, and her hitherto unopposed progress towards India is not only the common topic of conversation in all the bazaars and towns of Northern India, but it is openly commented on in the native Press throughout the country, and generally in what I consider most disloyal terms. Moreover, as straws show which way the wind blows, I may mention here a rumour which was lately current in some parts of India, that some of the worst native newspapers are in the pay of the

enemy, and when we take into consideration the fact that of late years a number of Russian spies—independent and unacknowledged, of course, but still spies all the same—have been found in British territory and in the native States, there seems to be no reason for doubting that such a rumour will readily find believers amongst the natives.

I now come to the Report of the Political and Military Committee of the Council of India on the future organization of the British Forces serving in India, dated 30th June, 1859, and I find the following opinion recorded:—

"That the maintenance of well-composed local armies, European as well as native, is essential to the permanent hold of our Indian Empire. Convinced that the local European troops, whether artillery or infantry, have performed eminent services, and proved themselves equal to any troops in the world, the Committee advocate, on the score of economy, efficiency, and of encouragement to merit, that the local European force be largely increased. They would regard it as the permanent garrison of India, not liable to be hastily withdrawn like the line troops whenever political emergencies in Europe pressed upon the home Government."

And further on they propose that of the whole force required to garrison India, two-thirds of the infantry, three-fourths of the cavalry, and the whole of the artillery should be all local troops; the remaining portions of cavalry and infantry being relieved periodically.

They agree with Lord Canning that the formation of such a local force would be beneficial to the general interests of the Empire.

This proportion was objected to by Sir Hugh Rose, Sir William Mansfield, and others of lesser note; but in considering their objections it must be borne in mind that in those days a local army meant, and indeed was, a distinct and separate body from the regular Queen's army, and no doubt it always was and always would be objectionable to have two such separate bodies in one army; but nowadays no such distinction could exist, because all would be equally the Queen's regular soldiers. And further, it is well known that many of their objections were caused by the recent meeting of some of the Company's troops, who were greatly and naturally exasperated at what they rightly considered the injustice of their treatment in being handed over like a lot of cattle from one service to another.

Undoubtedly at this time the array of opinion against a local European army appeared formidable, but the preponderance of authority was most certainly on the other side, and included such men as Sir John Lawrence, Sir Henry Durand, and Sir James Outram, as well as Willoughby, Vivian, and W. Eastlake, all of whom knew a great deal more about the requirements of India than did Sir Hugh Rose or Sir William Mansfield.

That there were objections to both courses every unbiased mind will probably admit; but I think that on careful and calm examination it will be found that many of those objections have now ceased to exist, so far as a local army is concerned, whilst on the other hand the difficulty of continuing the present system is daily increasing.

I now turn to no less an authority than the late Lord Lawrence, who in his famous despatch of the 17th December, 1859, enters more into details and writes as follows:—

"There are peculiar and special reasons for maintaining a local army in India; reasons which none of the Officers who advocate its abolition have really grappled with. I believe that the more the matter be inquired into, the more important would it be found that the main body of the Indian services should be local. . . . But if the authorities will not consent to this measure, at any rate, in common justice let the question be fully discussed in Parliament.

"Truly it is one, not of provincial, but of Imperial interest; not in the narrowest sense of adopting that policy which shall most improve the British 'line,' but in the highest sense of constructing the Indian army that it may to the utmost extent strengthen the hands of the Governor-General by being a storehouse of able men whose chief experience has been among the Indian people, and whose every interest is bound up with the prosperity of India."

But who in these days could ever hope to have such an important Imperial question properly discussed in Parliament? And of all those who might take part in any such discussion, how many would know anything, or care anything, about the subject? Consequently, unless the necessity for a local army were proposed by the party in power, I fear that it would be a total failure; still there is always some slight chance of success, and a sudden panic or scare, such as might perhaps be caused by a seizure of Herat by the Russians, might, if it came at the right time, rouse the nation sufficiently to enable them to understand the urgency of the case.

I think all will agree that no man ever lived who knew more about India than the late Sir Henry Durand, so the following extract from his remarkable despatch to the Secretary of State will find a fitting place here, and should be learnt by heart by all who take any interest in that country.

"Acquaintance with the habits and feelings of the natives also co-operates in smoothing down, if not removing, the arrogance and contempt which peculiarly distinguishes the bearing of troops new to India. Nothing but the most lamentable ignorance of the people could excuse some of the deeds which I have heard related by those who were present, as having occurred in 1857–58 on the march of European corps lately arrived."

And further on he continues—

"And the surest mode of perpetuating and daily increasing the antagonism of race will be a system of frequent reliefs which must preclude both Officers and men from parting with their own limited ideas, and is well calculated to widen the breach between the races, and to foster in the native mind the often expressed feeling that nothing is stable in our rule, but that everything, whether men or measures, is stamped with uncertainty and change."

Those words were only too true in 1860; but they apply with a hundred times greater force now than they did even then, when the country was throughout in a most peaceful state, governed by able

Statesmen who not only knew the people, and thoroughly understood all their wants, but who were also known and trusted by the people; and when the army was composed of the finest men that the world ever saw, who, when they returned to England, were replaced by others equally fine, all of whom were soldiers by profession. But we have changed all that now, and at the present time the ability of the rulers, the disposition of the people, and the physique of our English soldiers are all very different to what they were then.

The late Lord Mayo, when Governor-General of India, concludes his minute of the 3rd October, 1870, in the following words:—

"I admit to the full that a complete and efficient military organization is the base and foundation of our power here. We are bound to see that every Officer and man is fit for immediate service, and that every arm and every military requisite is maintained in a state of the utmost efficiency."

Those were the words of a Statesman, and of one too who was devoting all his time and energies to developing the resources of the country and relieving the burdens of the people, with whom he thoroughly sympathized, and by whom he was beloved and respected, whilst at the same time he did more than any other Viceroy has yet done towards placing our relations with the Afghans, and other independent tribes and countries, on a firmer and more friendly footing. Moreover, it is undisputed that the British forces in India were then in a far more efficient state than they are now.

In October, 1883, the "Nineteenth Century Magazine" contained a most ably written article entitled "Short Service: one cause of its failure," and signed G. R. Gleig, which could not have escaped the eyes of our military authorities. The writer was quite master of his subject, and in one part of the article he warmly advocates the formation of a local army; but I think he makes a mistake in supposing that the creation of such a force must necessarily, under existing circumstances, be a work of time. On the contrary, I believe that if it were now decided to form a local army in the manner that I shall propose further on, and the conditions were published to the army at once, the whole scheme could be completed by the end of this trooping season, and in three years' time—if we are allowed so long time for preparation—we should have the finest army in India that ever was possessed by the British nation. However, I sadly fear that, as usual, we shall postpone taking any definite action in the matter until it is too late to do it properly. The writer also expresses his belief that the conditions under which to attempt to form a local army are by no means so favourable now as were those of which former Governments failed to take advantage; but here again I disagree with him, for though it would doubtless have been an easy matter to form such a force in 1860, or even again in 1870, yet I firmly believe that it would be found still easier to do so now.

In another place the writer touches on the possibility of discipline being relaxed in a local army owing to its being cut off from home associations; he points out with truth and justice that "the 50,000 or 60,000 men who now garrison India are just as thoroughly removed

from home influences as a local army raised to serve the Queen would be. Why may we trust them if it would be rash to trust their countrymen, enrolled, trained, and officered precisely as are other portions of the British army?" And to this I might add, if we trust the native army so far as to believe that they will fight for us against all comers and maintain perfect discipline in spite of any internal intrigues and fears, why should we doubt for a moment the fidelity or the ability to maintain discipline of a local British force?

It is scarcely necessary for me to repeat here the opinions of Sir Fred. Roberts, Lord Chelmsford, Sir Lintorn Simmons, and other highly distinguished and talented Officers, as to the necessity for having a separate force of long service men for the Indian and Colonial armies, as they must be fresh in the recollection of all.

Notwithstanding all my endeavours to find out what real objections now exist to a local European army for India, yet I have experienced the greatest difficulty in obtaining any definite opinion on the subject. Some say that continuous service in that country deteriorates a regiment both physically and morally; that discipline becomes relaxed, and that the longer a man stays there the less he is fit for active service. But I do not think that any arguments are required to demonstrate that such statements are altogether unfounded; facts speak for themselves, and without going back to the days of the Mutiny I may say that Officers and others who went out from England to witness the grand Imperial assemblage at Delhi, in 1877, were struck with amazement at the magnificent physique and the splendid discipline of the British troops that were collected there, more especially the 5th Fusiliers and 6th Royals, both of which had been a very long time in the country. Others again say vaguely that it would never answer, and point to the mutiny of some of the Company's troops after 1858; but that point I have already disposed of. Others again say that it is desirable to give the whole of the Royal army frequent opportunities of acquiring that familiarity with foreign and active service which can only be obtained in India, and this is held to be a strong argument against a local army; but it is just as strong an argument in favour of one, for it really amounts to a confession that the regiments in India are in a better state of efficiency than are those at home, which is really the truth. Again, it is often stated that we have difficulty enough in obtaining recruits for the army, and that those difficulties would be greatly increased by the establishment of a local army, and, moreover, that the number of men passing into the Reserve Forces would be immensely reduced. To this I can only state my firm belief that by having a local army for India, service in the home army would become far more popular than it is at present by reason of the decreased proportion of foreign service, which is so dreaded by the greater number of men who enlist for short service; and further, that it will be just as easy to obtain recruits for a local Indian army now as ever it was in former days.

At present there is so much uncertainty as to the conditions of service to which a man commits himself when he enlists, that, in spite of those excellent pamphlets that are published on the subject, which

can be obtained by any one wishing to enter the army, it is always more or less a leap in the dark; he does not know where he is to serve, or for how long; but one thing he does know, and that is, that when once that service is completed, he will be thrown on the world with a small sum of ready money in his pocket, to do the best he can for himself, and without a pension to fall back on in case of sickness or loss of employment owing to his being called out for service at any future time. On the other hand, a man who enlisted for the Indian local army would do so as a professional soldier, knowing that his battery or regiment will be his home for a sufficiently long time to make it worth his while to devote the best years of his life to service in it, and that there are always plenty of good appointments open to a hard-working, well-conducted soldier who likes to try for them, and knowing also that when his time in the Service comes to an end he will have a certain fixed pension in addition to any money that he may have saved, and that he will be allowed to enjoy it in peace for the rest of his life.

After all, the army is only a profession which a man adopts for the purpose of earning a livelihood, and it stands to reason that in all callings of life—other things being equal—guaranteed long employment with a fixed pension will never fail to attract men in preference to a short term of employment here, there, and everywhere, and no pension at the end of it. In civil life no man in his senses would adopt any trade if he knew that at the end of a few years he would be discharged from that trade, and be prohibited, except in some special emergency which might never occur during his lifetime, from ever working at it again. From careful inquiries amongst the labouring classes in different parts of the kingdom, and also amongst the Volunteers and Militia, I have come to the conclusion that the amount of foreign service which the English soldier generally has now to undergo during the few years he is with the colours has a very bad effect on recruiting, and that if once it became generally known that the home army would never be called upon to serve in India or China, except in case of some terrible national emergency, most of the difficulties now experienced would speedily vanish, and enlistment for short service would become much more popular than it is at present.

I do not believe that the idea of a local Eastern army has ever been started before, nor am I called upon to mention it in this essay; but still I can see nothing against it, but rather a great deal in its favour; no complications need arise, and I am sure that a few years in China or Ceylon would be considered a very pleasant change after a long residence in India, and *vice versâ*.

One thing is absolutely certain, and that is, that the short service *as applied to our army in India*, has been a most complete failure, and will, if persevered in, lead to disaster. What is the condition of that army now? It is that in June, 1884, there were some 3,500 men wanting to complete the established strength, notwithstanding that a large bounty was offered and paid to every man who would prolong his service there, and that every endeavour was made to induce the time-expired men to accept the terms, and to remain on in the country; and in addition to this we must remember that, at the very least, nine

of the regiments, that is to say, all regiments that have been less than three years in the country, are unfit for active service. These are indisputable hard facts which require no further comment from me. Strange to say, it seems to be forgotten by most writers and speakers on this subject that in the Royal Warrant of the 1st July, 1881, it was laid down that for India, "Reliefs of whole battalions will be to a great extent superseded by annual reliefs by drafts, both in the case of Officers and men, so that neither Officer nor man shall serve in India more than eight years," which looked at the time as if it was intended to form a sort of short service local army—a species of compromise which could not have lasted a year, and which I think I may say was not attempted.

One objection, as I mentioned before, which is sometimes raised to a local army is that discipline would deteriorate; but this is purely imagination, and there is not a shadow of a reason for such a statement. On the contrary, it is well known that regiments arriving from India in England have nearly always been models of discipline as well as of everything else; and there are doubtless many Officers who still remember the admiration with which they looked at those magnificent batteries of the old Indian artillery that came home during the first few years following the amalgamation. Those who talk about loss of discipline appear to forget that the character and condition of a regiment depends almost entirely on the Officers, and fairly reflects the amount of interest taken by them in the well-being of their men. I could mention several regular regiments of the line that were bad when they went out to India, and continued bad during the whole of their stay there, for the simple reason that there was a low tone and a want of *esprit de corps* amongst the Officers, who took no interest whatever in their men; but I could also name a far greater number which were exactly the reverse, owing almost entirely to the high tone amongst the Officers, and the close intimacy that existed between them and the men; and it is such regiments that in a certain degree raise the European character throughout India. The old local army, though small, was composed of the same materials as the line; its glorious services in the field are written in history, and the colours of its regiments were covered with the names of the most splendid victories—in fact, I may say that it never failed, but equalled the Royal army in every way; while in knowledge of the people and the country, and the great power of turning everything to the best account and supplying a soldier's wants, they possessed advantages only to be acquired by the troops of the line after long residence and service in India.

The idea of converting a part only of the European army into a local force does not appear to me to possess any advantages whatever; on the contrary, I cannot imagine any one single point in favour of such a measure. Such a force would not work for the good of England in any one way; it would be an anomaly, and I believe an impossibility. Compromises and half-measures never succeed; they are the result of weakness and indecision, and should never be thought of for an instant in any measure which concerns the welfare and the safety of our

Empire. We must have either one thing or the other; the army must either remain as at present constituted, or must be converted, and that soon, wholly into a local force. The first has failed, and therefore I propose the adoption of the latter course.

Soldiering in England and soldiering in India are very different matters, and indeed a soldier's life in India is very different to what it was thirty years ago. Of late years immense care has been bestowed upon the health of the British soldier in India; much more so indeed than is the case in England. The authorities study the best way of keeping him out of mischief, preserving his health, and increasing his comfort, and one result of all this is the extraordinary decrease in mortality, as I shall attempt to prove further on. Improvements in barracks, in the sanitary condition of cantonments, combined with the amusements, education, and occupation provided for the men, and plenty of good wholesome food and drink, are the chief causes; but still no doubt much remains to be done, and most certainly will be done. Altogether I think there is no doubt that the British soldier is far better off in India than he is in England; like all other Europeans he lives better than does his own class at home, he is better fed, better housed, has lighter duties, and better pay. A private soldier in India has probably more pay in his pocket at the end of a month than a corporal has at home; but in return for all these superior comforts a slight penalty is exacted from him by the climate of the country: this much-vexed question will be referred to further on. It is necessary to remember, however, that the soldier's health in India, as elsewhere, does not depend solely on the climate, nor on the locality, dwelling-place, diet, habits, or duties, but on the product of all these together.

The Officers and men of a local army would fraternize more with the natives of India generally, and with the native soldiers especially, and are more likely to treat them with justice and consideration than do the Officers and men of regiments that are constantly shifting and changing, and in which the men only serve for a short period. Moreover, as a rule, the Officers of a Royal line regiment know little or nothing of the natives, of their language, customs, and feelings, and care still less; they live in a perfect state of isolation from them, and for the most part return to England practically little wiser as regards India than when they went out. Of course there are many exceptions to this rule, but if the army were made local, and they knew that if they chose they might make India their home for the rest of their service, they would naturally take more interest in everything connected with that country, and then would be found that store-house of able and experienced men that Lord Lawrence so wished for.

The broad distinction between "local" and "line" troops was that corps of the former were always in India being kept at full strength by Officers and recruits sent out periodically, whereas "line" regiments are relieved bodily from time to time: one regiment with its Officers making the voyage out at a very heavy expense, while the other is provided with passages home at nearly as great a cost; this double charge was, and would be again, saved by having a local army.

Let us now briefly consider the financial aspect of the question.

There can be no doubt, I think, that it would be more economical to have a local army than to continue as we now are.

It is not uncommon to hear the "heavy expense" of the British force in India spoken of in a tone which the complainers themselves would perceive to be utterly unreasonable, if they would but take the trouble to look at the question in its proper light. India has no right to expect cheap defence, but she has a perfect right to demand efficient defence, and in protesting against regiments being taken away just as they get to their prime, and being replaced by others that are unfit for service—in short, against paying highly for the means of defence which she is not supplied with.

An army of Britons maintained in India must be costly, and a bad man costs just as much as does a good one.

The natives of that country may rightly say, and as a matter of fact the more intelligent and loyal amongst them frequently do say: "We pay you most liberally in order that you should keep up an army large enough and good enough to defend us from being seized and overrun by any other Power, as well as to maintain order in the country, but we find that a large portion of that army is not fitted for that work; therefore you are defrauding us, and wasting the revenues of our country." And if we leave the vast majority comprising the poorer classes out of the question, and consider only how great is the interest which the wealthy natives have in the maintenance of the efficiency of the British army in that country, how they owe to it everything they possess in life, and even their lives besides, we shall be more inclined, I think, to allow their right to protest in the most energetic manner against the continuance of the present system.

In the Report dated 18th November, 1859, by Mr. J. T. Hammick, of the Statistical Department, to the Secretary of State for India, I find the following valuable information, which is all completely proved and admits of no doubt whatever:—

1st. The annual cost of 1,000 men, including Officers, of the "line" troops under a system of frequent reliefs, will exceed that of the same number of a local European force; which excess would amount to—

In the Infantry	£9,410	per 1,000 men of all ranks, supposing the establishments of both to be the same.
„ Cavalry	£5,670	
„ Artillery	£6,280	

But the cost of Officers alone was slightly higher in the old local army as there were 55 to every 1,000 men, whereas there were only 37 per 1,000 in the line.

2nd. That the rate of mortality in the local European force has hitherto been lower than amongst the line regiments in India.

He also shows that, in the ten years from 1843 to 1852, the number of men volunteering from line regiments to remain in India was 5,515, or 551 annually.

The Report is a most valuable one, but is too long to be inserted here.

I also find from the official Returns of 1853 that the establishments

of a regiment of British infantry in the East India Company's service and of the regular army serving in India were respectively—

	East India Company's Service, 1853.	Regiment of the "Line," 1853.	Establishment of an Infantry Regiment of the Line in 1884.
Combatant Officers	49	45	28
Medical Officers	2	4	0
Staff-Sergeants	5	6	2
Sergeants	50	46	46
Corporals	50	45	40
Drummers	20	20	16
Half-pay Drummers	30	0	0
Privates	820	950	780
Apothecaries	2	2	0

of which the annual cost was 53,380*l.* for the former, and 60,539*l.* for the latter.

The casualties in the Royal army are not given, but for the Company's six European regiments they are stated to be for the ten years 1843 to 1852 as follows:—

Average annual number of deaths.
- Bengal 132—the three years 1844, 1847, and 1850 being bad years.
- Madras 64—no active service, no bad years.
- Bombay 103—one year active service, and one bad year, 1843, during which there were 267 deaths in one regiment alone.

Total invalided during the ten years.
- Bengal 643 men out of two regiments.
- Madras 536 „ „ „
- Bombay 580 „ „ „

The largest branch of Indian expenditure is that for the Army (British and Native), which is equal to the aggregate revenue from salt and opium.

In 1856	it amounted to	12 millions sterling.	
„ 1862	it was just under	15 „ „	
„ 1873–74	„ „ over	15 „ „	
„ 1877–78	„ „ „	$16\frac{1}{2}$ „ „	
„ 1878–79	„ „ „	17 „ „	
„ 1879–80	„ „ „	$21\frac{1}{2}$ „ „	
„ 1880–81	„ „ „	28 „ „	which included nearly $11\frac{1}{2}$ millions for the Afghan war.
„ 1881–82	it was over	$18\frac{1}{2}$ millions sterling.	
„ 1882–83	it was nearly	$17\frac{1}{2}$ „ „	

But I believe these sums include the annual charges of the Volunteers, which amount to a considerable sum.

Under the present system all batteries and regiments serving in India are kept up to their full strength in Officers,—not that they are all there, because of course many of them are absent on leave and at depôts, &c., but the Indian Government pays them all the same whether they are on duty with their men or away on leave,—but almost all corps and batteries are below the established strength in men, for the simple reason that the depôts are unable to fill up the vacancies and the time-expired men will not prolong their service; thus we see an establishment of Officers and non-commissioned officers for full strength, and not enough men for them—which is causing needless expense. All infantry battalions in India should be kept up to a minimum strength of 1,000 privates each with the present strength of Officers and non-commissioned officers; and if this cannot be done with the number of battalions there now, let the number be reduced by one or two. When Lord Canning was Governor-General of India, he made the same complaint, and suggested the same remedy.

Bounties are constantly being offered to men to renew their army engagement and to serve on in India, and doubtless a number of men have renewed their service, but the vast majority do not because of the temptations in the shape of deferred pay in lump sum, and the going home to the old country to friends and relations; and I do not believe that any addition to the bounty would very much alter the numbers who renew, whilst I do know that if the bounty were stopped, not one single man would extend his service.

The following extract from the Report of the Inspector-General of Recruiting speaks for itself. The Report is for 1883, and gives the number of men who had extended their service last year between 1st July and the 31st December.

The bounty was 2*l.* to men of more than three years and less than seven years' service in regiments having their foreign battalion in India, who were willing to extend their service to twelve years with the colours.

	Home Army.					Indian Army.					Total.
	Under 3 years.	After 3 years.	After 4 years.	After 5 years.	Service not mentioned.	Under 3 years.	After 3 years.	After 4 years.	After 5 years.	Service not mentioned.	
Total of all Arms.	7	271	206	418	27	0	2	2,556	3,394	383	6,335

And the Inspector-General adds that, "with the exception of those serving in India, where a large bounty was offered, men do not appear to have taken much advantage of this permission;" and then he proceeds to give his reasons for this extraordinary proceeding of the men, which, with all due deference, are not the reasons which the men themselves give. I find that during the winter months the numbers of men in India who accepted the bounty increased, and in April, 1884, amounted to nearly 7,000 men.

Cavalry, 450 men
Engineers, 45 „
Artillery, 1,492 „
Infantry, the rest
} for further service in India.

I would ask, is it a proof of the success of a system that we are obliged to pay specially large bounties to 7,000 men in order to avoid having to pay for their passages home, losing their services to the army, and paying the passages of a like number to supply their places?

Is it creditable to our military organization that it should become necessary to adopt such a course and to make such concessions which are accepted by so few?

Is it, in fact, a proof that our army at home and in India, as at present constituted, is in a satisfactory condition, and in a fit state to uphold the honour of the nation, or to defend India—that brightest jewel in the English Crown—with its enormous wealth and helpless inhabitants, against all comers?

If these queries can be answered in the affirmative, then by all means let the European army in India continue as at present constituted; but if not, then in God's name let it be changed at once.

Now a word with reference to what I have termed "needless expense." I take the home accounts of the Government of India for an ordinary year, 1st April, 1881, to 31st March, 1882, and under the heading Expenditure I find the following items charged to the revenues of India:—

	£	s.	d.
Furlough allowance of Officers of British regiments serving in India	102,162	7	2
Pay and allowances during voyage of regiments returning from India	5,850	3	10
Net expenditure on the Indian troop service, including all charges connected with transport of troops to and from England ..	307,084	13	11
Passages of Officers and troops otherwise than in troopships..	6,456	14	0
Freight from India of unserviceable stores ..	690	0	0

And I think to that might fairly be added the pay and allowances of the regiments going out to India, as also the pay of six other regiments then serving in India, which have been less than three years in the country and are not fit for active service.

A regiment becomes chargeable to India from the day that it leaves England until the day on which it returns again; the time spent on the voyage is obviously lost to the State, and is therefore an increase in the cost of troops periodically received—a very serious consideration, especially when we remember that the new arrivals are all inefficient soldiers, and will continue so for the next three years. This is a point which was decided by competent military authorities long ago. The same also applies to the drafts of recruits that have been sent out to India during the past few years, and the Army Organization Committee

contended in their Report that the "young recruits that are sent out are not fit for duty in the field, and are but little addition to the fighting strength of the army. In most cases they suffer considerably from the climate, and have to be invalided and sent to hill stations, and on their becoming acclimatized are by that time at the end of their service, and have, at a great expense, to be sent home, to be replaced again and again by a like class of men."

The same Commission recommended the abandonment of Her Majesty's troopships for the transport of troops to and from India, as being needlessly expensive, and proposed to enter into contracts with the large steamship companies to carry the troops at a fixed rate per head; the average cost of transport by troopship for each soldier between England and Bombay is 20*l.*, and it is pretty certain that private companies would carry them at a much cheaper rate even now; and besides that, if we had a local army in India, they would not be required at all.

The total approximate cost of each troopship to the revenues of India at the commencement of the first trooping season, 1867–88, was—

	£
"Serapis"	205,093
"Crocodile"	204,142
"Euphrates"	224,857
"Jumna"	227,795
"Malabar"	226,425

And since then we know that the annual cost must have been about 307,084*l.*

I find that in former days, 1852 to 1857, the cost of sending men out to India averaged 14*l.* 10*s.* each, and it would certainly be less now than it was then.

Setting the force of British troops required for India at 61,591 men, it is a simple matter of calculation for any one who is accustomed to statistics and accounts to work out the following sums for both systems, local and as at present:—

1st. The annual loss of service of troops constantly on the seas proceeding to and from India, including time-expired men and invalids.

2nd. The annual cost to India in each case, taking into account the abolition of the expensive troopships in the case of a local army.

3rd. The annual cost of maintaining inefficient troops in India—that is to say, troops that have been less than three years in the country, and who cannot be included in the number capable of aiding in the defence of the country. In these calculations cavalry and artillery must be excluded; and, in fact, all through this essay the term inefficient is only applied to the infantry and rifles.

4th. The annual cost of bounties in one case, and of pensions in

the other; and I think it would be also only fair to include in the former the pay of men joining the Reserve.

Another very large item of expense is the loss by exchange in remitting money to England, usually termed "Exchange on Transactions with London," which in the Budget estimate for 1884–85 is calculated at over three-and-a-half million pounds sterling! and the greater part of that would, or rather could, be saved if the army were made local. It is also necessary to mention a large sum that becomes due yearly for what are called the non-effective charges connected with the portion of the British army serving in India, which did not exist prior to 1822, but for forty years after that amounted to 60,000*l.* annually. After that, different systems were introduced, which led to much complication, and great difficulty in ascertaining what share of a man's pension was chargeable to India, and what to the Home Treasury; the Indian Government never seem to have been told exactly what their share was; the payments then fell into arrears, and were suddenly discovered last year to have amounted to nearly two-and-a-half millions true sterling. Such complications would naturally cease to exist with the establishment of a local army.[1]

I think I have written enough to show that the maintenance of our British army in India, as at present constituted, causes a great and needless waste of money; but what is waste and folly now may, and almost certainly will, if not speedily rectified, cost life and treasure—if not India—hereafter.

Before concluding this portion of my subject it may be interesting to note what pensions were given by the East India Company to the rank and file of their local army.

1*s.* a day was fixed to all privates and corporals discharged after twenty-one years' service, also to sergeants who had not completed eight years in that rank; but after having served their full time, including eight years in the grade of sergeant, they received 2*s.* a day in England, or 30 rupees a month in India.

A sergeant-major received 2*s.* 6*d.*, and a quartermaster-sergeant 2*s.* 3*d.* daily in England.

If they were invalided after fourteen years' service they received: privates and corporals, 9*d.* a day; sergeants, 1*s.*; sergeant-major and quartermaster-sergeant, 1*s.* 4*d.* and 1*s.* 2*d.* respectively.

There were also special rules regulating the pensions of men discharged on account of wounds or injuries received on service.

The army in India now (all troops) is about two-thirds the strength of what it was in 1852, while the expenses connected with it have increased in the proportion of just one-half.

A Parliamentary Return just issued shows the cost of the transport of Indian troops (British and native) to Egypt, in 1882, to have been 1,241,634*l.* to the Indian Government, and only 25,693*l.* to the

[1] In the Appropriation Account for the year ending 31st March, 1883, I find the Government of India paid into the *Home Treasury* the charges for the year, which amounted to no less a sum than 500,000*l.* sterling for the effective services of the Regular Forces serving in India, and 600,000*l.* for the non-effective services.

Admiralty. What benefit did India, or the Indian army, obtain from such an enormous expenditure?

Now for the sanitary or "health" view of the question.

The Report of the Royal Commission on the Sanitary State of the British Army in India, which was at work during four years, 1859 to 1863, showed what that state had been, and how it was being improved. In the first part of the century the death-rate among British troops revolved round 69 per 1,000; and the constant sick in hospital amounted to 10 per cent. of strength; and the loss by invaliding was high in proportion. Since then the work of improvement has been steadily progressing with the most satisfactory results; and I find from the Reports of the Sanitary Commissioner for India, that in 1871 the death-rate, including deaths among invalids after arrival in England, was 18·9 per 1,000; and that of the invalids sent home to England 16·02 per 1,000 were discharged; making a total loss to the army of 34·7 per 1,000; or just one-half of the old *death-rate* alone; and the constant sick in hospital amounted to 5½ per cent. of strength.

From the same Officer's Report for 1879 I gather the following information:—

During that year there were 9,500 British troops on service in Afghanistan out of a total average strength of 59,082 men.

"One result of the short service system is that the percentage of men under twenty-five years of age has greatly increased, whilst that of soldiers over thirty years has greatly decreased."

"The proportion of men of less than two years' service has very greatly increased during the last ten years; and these facts, in the opinion of most medical men, are deserving of most serious consideration, for they contend that the want of acclimatization is the great element to be taken into consideration in the predisposition of Europeans to certain diseases in a tropical climate—notably to enteric fever. Of the men who died from that form of disease, the greater part who succumbed were the newly arrived, whilst there was a marked decrease in the liability to attack amongst the more matured men. Thus in the first and second years of service the ratio of deaths was nearly 8 per 1,000; whereas it was only 1·24 among those who had been from seven to ten years in the country. There was a very high rate of invaliding among young soldiers from various causes."

Again, from the Sanitary Report for 1882 I gather the following:—

The average strength of the army was 57,269.

Admissions to hospital ..	1,444·8	per 1,000 of strength.
Daily sick-rate	65·2	„ „ „
Death-rate	12·03	„ „ „
Do. from enteric fever	2·53	„ „ „

The newly arrived regiments had an average strength of 3,344 men, out of which

The admission rate was ..	1,421·7	per 1,000 of strength.
Daily sick-rate	71·2	„ „ „
Death-rate	16·45	„ „ „
Do. from enteric fever	7·18	„ „ „

Of the troops located in the hills the death rate was 8·65 per 1,000. The total loss by invaliding was—

For change of climate	985	men
For discharge	694	„
Not stated..	213	„
Total	1,892	„

chiefly caused by anæmia and general debility.

The smallest ratio was from the Madras Presidency.

During that year the average strength of the native army was 114,894 men, and their

Daily sick amounted to ..	37·	per 1,000
Death-rate	14·76	„
And admissions to hospital ..	1,129·	„

On examining the Parliamentary Returns for 1881–82, I find that the British troops in Madras were healthier than those in Bombay or Bengal, but the returns show a marked improvement on previous years. For instance, in the decennium 1860–69 the average death-rate in Bengal, which comprised nearly two-thirds of the British force in India, was 29·98 per 1,000; and in the decennium 1870–79 it was 21 per 1,000, but in 1881 it was only 17·05 per 1,000, exclusive of troops serving in Afghanistan, enteric fever and cholera being the chief causes of mortality—and this decrease manifested itself throughout the whole of the Bengal Presidency. The admission rate fell from 1,813 per 1,000 in 1880 to 1,729; and the daily sick from 75 to 72.

The influence of age on mortality from enteric fever is shown by the fact that 108 out of 155 deaths occurred among men under twenty-five years of age; and taking it according to length of residence in India, the mortality from this fever was distributed as follows:—

Two years' residence and under ..	4·55	per 1,000
Three to six years' residence ..	2·07	„
Seven to ten years' residence ..	0·56	„
Ten years and upwards	0·40	„

"There can be no doubt," the Army Sanitary Commission state, "that whatever may be the influence of local and climatic causes in predisposing to enteric fever, the subject, the young soldier, is the main death cause, and that to obtain the highest enteric fever death-rate it is only necessary to send him to India and bring him back under the short service system."

"The amount of fever and fever liability will no doubt vary in some years, but with the present terms of army service this fatal fever will form an important item in the Indian army death-rate. This is the result of long past as well as of present experience, and all that can be done of a practical character is to try to diminish liability in young soldiers first landing in India by having his drill completed before landing in India, by exercising good care over the habits of these young men until they are accustomed to the climate, by placing as

many of them as possible at hill stations, and by rigid attention to every local sanitary precaution."

There is an admission which of itself ought to be sufficient to stamp the short service system for Indian troops as a complete, expensive, and cruel failure.

Surgeon-General Cunningham, in his Report for that year, gives a table showing the unfavourable influence of the climate of India on newly arrived regiments as compared with the health of the army generally, from which it appears that the admission rate of the new regiments was over 200 per 1,000 higher than that of the army as a whole:—

The daily sick	5	per 1,000	
The death-rate over	6½	„	
And the enteric fever death-rate ..	8	„	higher.

All these facts prove conclusively that the sanitary conditions under which a soldier lives in India are by no means unfavourable provided he is not sent out too young; and if we compare the army death-rate in that country with that of our large towns in England we shall have to own that the improvements effected of late years have produced most satisfactory results. Suppose we take it for granted that all men who are invalided to England would die if they were kept in India (this is merely for argument's sake), then we should have the death-rate of the whole British army in India for 1871 as 34·7 per 1,000, viz., actual death-rate 18·9, and the balance invalids; and I find that the death-rate in the town of Huddersfield, for the whole year 1883, was 21·31 per 1,000; while that of twenty-eight large towns in England gave an average of 19·57 per 1,000.[1]

All this shows clearly that the climate of India is not in fault, but that the system is entirely wrong, and that our European army in that country should no longer continue as at present constituted.

These Returns show the loss of life and the losses by invaliding; and if we put the value of each man so lost to India at 100*l.*, we can easily calculate the loss in money.

Whilst on the subject of health it may not be inappropriate to quote the following words by the late Sir George Ballingall, which have been endorsed by Dr. Mouat, and by most eminent medical men of Indian experience; he says:—

"Men at the age of twenty-five, thirty, and upwards are capable of as much, or perhaps more service in India than they would be after the same age in Europe, for in the former they are less liable to suffer from pulmonary and rheumatic affections, which prove so destructive to elderly men in our variable climate. On the other hand, I am not aware that there is a single disease peculiar to advanced life which is likely to be aggravated by residence in a tropical climate; such climates are certainly calculated to bring on premature old age, particularly if combined with thoughtlessness and dissipation, but on

[1] In the south-west suburbs of London, the death-rate for 1883 was 17·49; and that for all London was 20·4 per 1,000 inhabitants.

the other hand, if combined with due management, may be considered perhaps favourable to the decline of life."

Another very eminent medical officer, whose experience was second to none, Sir Ronald Martin, when giving his evidence in the Indian Army Report, stated that in his opinion the chief cause of the great mortality in regiments on their first arrival in India was "the absence in Her Majesty's regiments of certain traditional local experiences possessed by the old soldiers of the Company's European battalions, and which to a certain extent shielded the younger men on their first arrival from the consequences of their ignorance and recklessness." And this being true of the men who, for the most part, composed the regiments of those days, how much more true is it of the boy regiments that go out to India under the present system.

The weight of epidemics doubtless falls heaviest on new arrivals and young men, and therefore raw recruits and boy regiments are placed at a great disadvantage if subjected at once to the annoyances of heavy drill and an unfavourable climate.

A great deal has been said and written from time to time about people in India becoming acclimatized, but from my own experience I have come to lose all faith in acclimatement, and the probability is that until a man has been about ten years in the country, its influence, if it exists at all, protects the soldiers in but a very partial degree. The climate of India is so very various that acclimation seems scarcely possible, and being acclimated to the dry heat of summer and the dry cold of winter which is experienced in the Punjâb and part of the north-west provinces is very different to being acclimated to the moist heat of Bengal or Burmah, and *vice versâ*. I have found that what young men most suffer from in India, for the first two or three years after their arrival, is not so much the actual heat, or cold, or damp, but it is chiefly from illnesses brought on owing to their ignorance, inexperience, and recklessness, which is due in a great measure to the absence of old-seasoned soldiers to teach them how to live properly in a new country and strange climate; and I believe that all excesses in eating and drinking tell on them more than old soldiers, weaken their unformed constitutions, and render them more liable to contract disease, and more likely to be attacked in epidemics. Therefore I consider that if the recruit is to serve in the plains of India, it is most important that he should not be a mere boy, but a full-grown man, old enough and steady enough to have some control over himself on his arrival in the country.

I have read in a medical work somewhere, "that if there is any change meriting the name of acclimation it is this, that after a regiment lands in India a gradual sifting out takes place from it of the anti-tropical constitutions, the utterly reckless men, and the despondings; and the rest learn a certain amount of prudence."

All evidence goes to show that the mortality in the wars of India was chiefly from disease; out of 9,467 men dying among regiments in India prior to the Mutiny, or sent out in 1857–58, only 586 were killed in action or died of wounds.

I will now glance briefly at the effects of short service on the army in India.

The Army Organization Committee strongly deprecated that system as being unjust to the Indian taxpayer, and detrimental to the efficiency of the British troops in India. The Report urges that it is absolutely necessary, if the British army is to be employed in India, that the injury done to that country by the change from the long to the short service system should be promptly remedied, and it recommended that, until the latter system be altered or abolished, no soldier under three years' service should be sent to that country, and then only those should be sent who have extended their service to nine years with the colours; and further, that all non-commissioned officers and men who desire to remain in India for a longer period may be allowed a further extension of six years' service with the colours in India, and be given a bounty.

Sir Frederick Roberts, in his famous speech at the Mansion House on the 14th February, 1881, said: "Young soldiers of eighteen or twenty may be and probably are individually as brave as their comrades of maturer age, and as well able to fight when everything is *couleur de rose;* but I will never admit that young soldiers, or those new to each other, are as reliable in times of difficulty as are old and tried soldiers. What is it that has enabled a comparatively small number of British troops over and over again to face tremendous odds, and win battles against vastly superior numbers? The glorious annals of our regiments give the answer—discipline, *esprit de corps*, and power of endurance, the three essentials which are absolutely wanting in the young soldier. What is it that causes the long casualty roll in a campaign? Not the losses in battle, but the steady, never-ceasing disease brought about by insufficient and badly cooked food, hard work, night duties, and by exposure to extremes of heat and cold. Against such trials only the strongest can bear up, and unless our regiments are composed of men, full grown, of prime stamina, our armies, in point of numbers weak enough at the best for the work they have to do, must dwindle away rapidly when they take the field."

He then gave the well-known instance of the 2nd battalion 8th Foot, which had been in India two years, and was composed of mere lads quite unfit for service. On the arrival of the battalion at Kurrum, a march of only 70 miles, there was only about half a battalion left of it; and at the Piewar Kotul there were only 366 men fit for duty, while the wing of the 72nd Highlanders, which had been eight years in India, had 330 men present, the other wing being still stronger.

Why, may I ask, did Sir Frederick Roberts select the 60th, 72nd, and 92nd Regiments for the famous march from Kabul to Kandahar? For the simple reason that those corps contained a larger proportion of old soldiers than did the other regiments then available.

I have no hesitation in saying that such a march would be simply impossible for two-thirds of the British infantry now in India.

The average length of service of the 92nd Highlanders on that march was as follows:—Sergeants, 15 years; corporals, 11 years; privates, 9 years. Of the three regiments the 72nd contained the

most young men, and it is worthy of note that during the march the 60th and 92nd improved daily, but the 72nd gradually fell off, and ended by having more men in hospital than any other regiment composing the force. Sir Frederick Roberts stated in his speech that he never feared the result of the march, because he had tried men, not untried and untrained men, to depend on.

The Maiwand disaster in July, 1880, caused a scare in England as usual, which resulted in the immediate despatch of six battalions of infantry as reinforcements for India; three of these would have gone out during the following winter in ordinary course of relief, but the other three were from the Mediterranean garrisons, and were not on the roster for Indian service, but were sent because, in the opinion of the military authorities, they consisted of well-seasoned soldiers, and they were admitted to be unfit for active service. I remember reading at that time the following remarkable paragraph in one of our leading journals, which ran as follows:—"The arrangements which have been made for sending regiments away in a state of inefficiency are in accordance with the conditions of the system which Lord Cardwell introduced."

Take that statement, the truth of which is undisputed, along with the decision of the military and medical authorities in India that men are not fit for service in that country until after a residence of three years; then consider the sum that each such man costs the country before he is landed in India and for the next three years, and also the fact that this sum is either lost altogether, or added to considerably if the man dies or is invalided home soon after his arrival, and it does not require very much calculation to appreciate the value of a man who is not likely to succumb to the vicissitudes of a somewhat trying climate.

Look again at Egypt. A regiment of well-drilled, efficient soldiers was wanted for service in the Soudan; there was not such a body of men in the United Kingdom at the time, so the opportunity was taken of the approaching return of the 65th Regiment, after a residence of twelve years in India, to stop that gallant corps at Suakim, and to make it form part of the forces engaged at El Teb and Tamanieb against the Arabs. The average length of service of the men of that regiment who were killed and wounded in those two engagements was 11 years $10\frac{3}{4}$ months.

On the 13th April, 1875, in the theatre of the Institution, General Sir W. Codrington (in the chair) made use of the following words:—"During the Indian Mutiny I remember reading of men who were sent out, and were at once put into hospital, and out of a detachment perhaps of twenty, one-third would come back, never having done a day's real soldiering." Everybody connected with the government of the army knows the truth of that statement; and the gallant General continued: "That is the case in all expeditions wherever there is hard service. If we could, as a general body of Officers, bring to the notice of the Government, by the discussions that take place here, the money value, as well as the value of the credit to the army and nation, of getting efficient men and no others for the Staff to act upon, we

should then be doing a very great service to the authorities in this country;—I look upon it that one object of these essays, and of the opinions expressed here, is to impress that in the strongest possible way upon the Government of this country."

It is remarkable that although Lord Wolseley considers no praise too high for the boy regiments of the present day, yet he put none of them into the first line at Tel-el-Kebir, nor will he have any of them for the Soudan expedition; and furthermore, he will not have any man for the special Camel Brigade under twenty-two years of age.

In proof that some regiments, recruited under the present regulations, are quite unfit for service even after more than three years' residence in India, I may mention the fact that one day when I was in Afghanistan a battalion of British infantry passed me on its return march to India. There were only about 200 men walking (not marching) with the colours, all the Officers were riding ponies, and they were followed by a long stream of unguarded doolies carrying sick and footsore men; that regiment had been five-and-a-half years in India, and had been about five months in Afghanistan, during which time it was not once in action, and yet it was at the time I saw it, and for some time before and after that, quite unfit for service.

The natives of India are too intelligent not to perceive the weakness and inefficiency of many of our battalions in that country, and if they have been hitherto partly blind to it, which some people at home imagine to be the case, we have enemies most knowing, and ever ready to enlighten them on such points. The natives generally, especially the Sepoys in our native army, have always had the greatest respect for and the highest opinion of our British soldiers, but then those soldiers were men in every sense of the word. Now the case is very different, and a large proportion of them are mere boys; and no one who has any knowledge of the country and the people can believe for a moment that they have the same respect for the Khākee-clothed boy soldier of 1884 as they had for the scarlet-coated stalwart heroes of the Mutiny, or for the splendid men of 1864. I myself have often heard the native soldiers talking to each other about the wonderful change that has lately come over our army, and I have frequently been asked by them the cause of it or the reason for it. It is all very well for people at home to talk glibly about Reserves and so forth, but such talk in India has no meaning whatever, for the simple reason that there are no Reserves in that country, nor will the Reserves now in England ever have a chance of going there until it is too late for them to be of any use.

I am quite certain that nothing can be more unwise than to render our British regiments—on whom, in fact, everything depends—contemptible in the eyes of the natives.

Reserves! Has any one calculated, I wonder, how many would be required, how long they would take reaching the scene of action, and what would be done with them when they got there? I may safely say that the contingency of having ever to send Reserve men to India has never been thought of; and yet what other reinforcements would we have to send there? For no one in his senses could call a few

regiments of untrained, inefficient boys a reinforcement; they would be a source of anxiety, if not a positive encumbrance.

If the time ever comes when we shall really need the help of Reserve men as reinforcements in India, there is no doubt whatever that the whole country will be in a ferment, if not in open rebellion, and our front line driven back, and that by the time they reached the scene of action the country will most probably have shaken us off, and passed to a stronger Power than ourselves, and one too which is always prepared for war. And does any one suppose for one instant that a Power which went to the trouble and expense of attacking us in India by land would be such fools as to leave the Suez Canal open for us to make use of as a high road for our reinforcements proceeding to India? To block that canal would be the work of one day, and a small quantity of dynamite.

All this points, I think, to the absolute necessity of having a sufficient and efficient force of British troops in India, every man of which shall be physically fit for military operations of the severest kind, either beyond our frontier against the numerically superior forces of a European invader, assisted, and probably preceded, by swarms of well-armed Turkomans and other tribes, or against organized rebellion within our borders; or, what I consider the most probable, against a combination of both. Moreover, when considering the chances of an invasion, or a threat of invasion, we must never lose sight of another terribly weak point, which might be mentioned here as not being irrelevant to the subject,—I refer to our native army in India, which, though well armed and disciplined, is not organized in such a manner as to be capable of bearing any considerable strain on it, being inexpensive and absolutely without reserves of any sort or kind, either in Officers or men, particularly at a time when our prestige as a paramount Power might be in danger.

The Duke of Wellington used to say that the power of the greatest armies depends upon what the individual soldier is capable of bearing and doing, and the truth of that statement has been proved over and over again. Inkerman was won by the *individual* action of regiments, not by the strategy and tactics of Generals, and many of our great victories in India have been so won; therefore I say that all our British regiments in that country should be now and always capable of such individual action, instead of being utterly incapable of it, as many of them are and always will be under the present system.

No such absurdity is practised in ordinary life; no railway company or manufacturer would dream of placing the charge of their concerns, or the working of their machinery, in the hands and keeping of inexperienced men who are too young and at the same time physically unfit for the trust; therefore, why should the guardianship of our great Indian Empire be so placed? India is paying enormous sums for the services of English soldiers, which, in justice to the payers, and in the interests of the Empire, if not of the whole world, should be the best procurable; but instead of that she is supplied with what all admit to be an inferior article; and who, may I ask, is, or is likely to be, the gainer by such a one-sided transaction?

From time immemorial we have been called, with perfect truth, a nation of shopkeepers, but whereas in former years we were shopkeepers who were wise enough to know how to take care of our goods, and who not only did take right good care of them, but were also constantly adding to them as well, so now in these later years we have become exactly the reverse, and appear to have lost all interest in our vast possessions, and all fear of the cupidity or jealousy of others who are not so well off as ourselves. We spend enormous sums of money, it is true, on providing miserably small guards here and there, but no one seems to care whether those guards are composed of strong, efficient, and trustworthy men or not. Foreign nations know our strong points as well as we do ourselves, but, what is more important, they, especially the Germans and the Russians, know our weak points also, which is more than ninety-nine out of every hundred Englishmen do.

If any one doubts this, let him read Colonel Bowdler Bell's translation, in No. CXXV of the Journal of the Institution, of a lecture given in Germany by Major Wachs, of the German army, which I think will rather astonish him. How many Englishmen in England know anything about the force which is guarding our Indian Empire, or the danger with which that Empire is threatened?

What species of blindness or madness has come over our great merchant princes and the thousands of other Englishmen who have money invested in India, or whose manufactures find a market there, not to mention all those who have relations and friends earning their living there, that not even one of them will try to find out the true state of the case, and insist on proper guards being provided for our mercantile interests and the lives of our fellow-countrymen, even if they do not care about the national honour?

I have often spoken to rich merchants of Manchester, Liverpool, and Yorkshire on this subject, but the tenour of their replies is always the same, that they have their Members of Parliament to look after their interests, and that the country has a paid Ministry whose business it is to see that the army provided at such an enormous cost is fit for its work, and so on; in short, they trust and believe that all has been done, and is still being done, as it should be done, and that the money provided is properly spent. They know that the army estimates amount to sixteen millions sterling, and therefore they imagine that a really good article is provided for that large price, but they do not know that a further sum of sixteen millions is being paid by India for the pay and support of nearly half the English and the whole of the native army, and they are perfectly happy to live on in their "fool's paradise," and to be deceived in every possible manner. Such men fairly represent the bulk of the British nation, who seldom or never take the trouble to read anything that is written on military or Indian topics, and even when on rare occasions they can be got to read, they will not so think about what they do read as to see the real meaning of it in the most superficial degree; and yet every one of them know that any serious trouble in India would entail heavy losses on themselves and their friends, and that the loss of that country would, in all probability, ruin them.

How many Members of Parliament either know or care one brass farthing about matters of such vital importance as the defences of India, or the condition of the army in that country? I may safely say that there are not ten gentlemen in the whole House of Commons who do; and even if the day should come when ten such men could be found, their united efforts would avail nothing unless the party to which they belonged were in power at the time.

The words and warnings of such men as Sir Lintorn Simmons and Sir Charles Nugent are unheeded, and the whole question of Imperial defence and national honour is made a "party" question of secondary importance. The interest taken by the Ministry—no matter which side is in power—is evidenced by the fact that the Secretaries of State for India and for War are invariably men who possess the smallest possible theoretical knowledge of the great departments over which they preside, and who nevertheless are invested with supreme authority; whilst the Viceroy of India is dependent on the Secretary of State.

There is a powerful "peace" party in England, who clamour for peace at any price: do any of them ever consider that to obtain and to maintain that much-to-be-desired peace they must be prepared for war? That party is headed by large manufacturers and capitalists who pay taxes, a part of which is expended on the army that is intended to maintain peace, but do they ever reflect how that money is expended, or that the army which is paid from those taxes is quite unprepared for war?

There was a time when battalions of British infantry went into action with 1,000, and even 1,100 able-bodied men in line, and I hope that we shall some day soon see the error of our ways, and return to that state of efficiency; compare that state with the strength of the battalions that went on service into Afghanistan during the late war in that country when several of them failed to muster 500 men, not to speak of the many that remained in India unfit to take the field. After that war, the Army Organization Committee of 1880 recommended that the strength of each battalion of British infantry should be 8 companies, or 1,044 men, and that 18 such battalions of 18,792 bayonets should be always available for field service.

We have been often told that "the short service requires a larger number of recruits than a system of voluntary enlistment can furnish, with the necessary physique."

A series of regulations which aim at retaining soldiers longer with the colours have recently affirmed the correctness of this view, but they of course arrest the growth of the Reserve; and these regulations have been due chiefly to the great difficulty—in fact, I may say to the impossibility—of keeping up our army in India to the established strength.

I have already shown how many men were induced to prolong their service in India by the donation of a large bounty; I will now give the numbers that returned to England during the last trooping season, omitting women, children, and Officers.

Name of Ship.	Month of Arrival.	Men in Health.	Invalids.	
"Malabar" ..	November ..	742	119	Government troop-ship.
"Euphrates" ..	„ ..	926	149	Ditto.
"Jumna" ..	December ..	822	259	Ditto.
"Serapis" ..	„ ..	1,044	83	Ditto.
"Euphrates" ..	January ..	1,163	0	Ditto.
"Malabar" ..	February ..	678	0	Ditto.
"Serapis" ..	March ..	300	2	Ditto.
"Jumna" ..	April	487	1	Ditto.
"Crocodile" ..	May	563	360	Ditto.
"Euphrates" ..	„	77	634	Ditto.
"Clive" ..	April	648	..	Extra ship belonging to the Indian Government.
Total ..	.. ..	7,450	1,607	

These numbers include all regiments and batteries returning home in the ordinary course of relief. The number of invalids is below the mark, as I was unable to ascertain how many were landed from the "Clive"; the total number of men conveyed in that ship was 900, of whom 648 certainly were men in health.

Numbers of troops that went to India from England during same trooping season:—

Month of Departure.	Officers.	Men.	
4th September ..	43	1,144	Drafts only.
7th „ ..	47	1,139	Including 3 batteries of artillery.
12th „ ..	47	1,153	Including 26 Officers and 621 men 1st Irish Fusiliers.
15th „ ..	31	1,014	Including 3 batteries. Sailed *vid* Cape of Good Hope.
15th December ..	29	1,219	Drafts only.
18th „ ..	60	1,170	Ditto.
28th „ ..	63	1,128	Including 20 Officers and 430 men 7th Dragoon Guards.
9th January ..	65	1,149	Including 25 Officers and 614 men 1st Northampton Regiment from Gibraltar.
23rd February ..	68	1,141	Including 27 Officers and 696 men 1st Munster Fusiliers from Malta.
4th March ..	68	1,177	Drafts only.
8th „ ..	19	736	Ditto.
Total ..	540	12,170	

These were all the men that could be spared from the home army, or in other words there were no more men to send.

Notice the large numbers of Officers altogether; notice also the strength of each regiment.

From these two tables it can be seen at a glance how many men were on the high seas at one time. The "bounty" system was a success in so far as it staved off a very pressing difficulty, but it formed a very bad precedent, and one which may yet give the military authorities serious financial trouble.

From the Return presented to the House of Commons, and printed on the 6th March, 1884, I find the numbers of the establishments of the regular army serving in India to be as follows:—

	Officers.	Warrant Officers.	Sergeants.	Drummers, Buglers, and Trumpeters.	Rank and File.	All Ranks, 1884-85.
Cavalry of line, 9 regiments ..	198	18	342	54	3,672	4,284
Artillery — 10 Horse batteries ..	64	3	99	20	1,460	1,646
Artillery — 40 Field „ ..	233	5	381	80	5,840	6,539
Artillery — 27 Garrison „ ..	156	3	178	54	2,686	3,077
Royal Engineers	436	..	3	..	..	439
Infantry of line, 50 battalions ..	1,400	100	2,301	805	41,000	45,606
Total	2,487	129	3,304	1,013	54,658	61,591

And in the same Return I find that the total numbers of effectives of all ranks on the 1st November, 1883, including drafts on the voyage out, were—

Cavalry	4,411
Artillery	11,954
Engineers	298
Infantry	42,252
Total ..	58,915

These numbers show the carelessness with which such Returns are compiled, and the amount of attention that members of the House of Commons pay to them; for there are actually in India a far greater number of batteries of artillery than are shown on the establishment; and furthermore, the number of effective artillery in Return is shown at 11,954, as against a fixed establishment of only 11,262.

Strange to say, on page 7 of the Report the total number of effectives of all ranks on 1st February, 1884, is stated to be 60,391, which includes all who were then on the voyage out; but it also included all those *who left India after that date.*

No explanation is given of the omission of the non-commissioned officers and sappers of the Royal Engineers.

The British garrison of India is now nearly 3,000 men below its established strength, which means that there are only 46 regiments instead of 50; and as there are not recruits at home sufficient to fill the gap, there will, I fear, be a repetition again, this trooping season, of the offer of bounties.

Mr. Cross is sanguine enough to state in the House of Commons, where certainly great general ignorance prevails concerning the state of the army in India, that he hopes that army will be at its full strength next April; but I imagine he stands alone in that belief. The Indian Budget speech was made as usual to an almost empty House, and with the Franchise and Egyptian questions engrossing the attention of the country, members did not care to be critical, therefore Mr. Cross had not many awkward questions to answer.

The total number of recruits required for the *whole* British army for the year 1883 was 39,242; and the total number that were enlisted was 39,096, which was the largest number on record for one single year, and was obtained by reducing the age, height, and chest-measurement, and moreover, more than one-third of this number were from the Militia, which of course suffered in proportion. Yet, notwithstanding this tremendous effort and unprecedented success, the army on the 1st January, 1884, was 7,626 non-commissioned officers and men short of the establishment.

The requirements for 1884 are 38,327 men.

Of the recruits enlisted during 1883 *for the infantry* there were

768	under	17	years of age.	
39	between	17 and 18	years old.	
6,930	„	18 „ 19	„	
7,750	„	19 „ 20	„	

The total of recruits for the infantry was—

For short service	21,712
For long service	752

In June, 1883, the following changes were introduced into the Service. Men after completing three years with the colours were allowed to extend their colour service to twelve years, with the privilege of re-engaging in their last year for a second period and pension; but on examination it will be found that this privilege is only allowed to certain non-commissioned officers, and is withheld from all privates.

A Parliamentary Return shows the effective strength of the whole British army on 1st January, 1884, was 181,227 of all ranks, as against 193,397 on 1st January, 1883.

My idea of what should be the permanent future garrison of British troops for India is shown in the table on the following page.

In addition to which there would be the same number of Royal Engineers as at present. The whole force to be divided into four army corps, as recommended by the Army Organization Commission, with the addition of Ceylon to the Madras command. Ceylon is to all intents and purposes part of India, and it should be governed and garrisoned from India, but most probably the Colonial Office would object to such a proposition as that; anyhow in the above numbers I

have included one regiment of British or Eurasian infantry, and two garrison batteries (one British and one Eurasian) for that island. *Remember it is not a Colony in any sense of the word.*

	Officers.	Men.
13 batteries horse artillery	65	2,041
59 field batteries	295	9,253
6 heavy field batteries	30	570
8 mountain „	40	848
24 garrison „	120	2,760
9 regiments cavalry	198	5,400
50 battalions infantry, of 8 companies and 1,000 *privates* each	1,400	55,200
2 Eurasian batteries (garrison)	10	230
2 „ infantry battalions	56	2,208
Total	2,214	78,510

The Commander-in-Chief of the whole Army to be so in reality, with full powers to appoint his own Generals, Brigadiers, and Staff, without the interference of the Governor-General; in fact, I should like to see the two offices of Governor-General and Commander-in-Chief combined in one person, and so splendidly organized is the whole machinery of Government in India that there would be no difficulty in one man performing the duties of both offices.

In addition to the number of men I would propose having three machine guns given to each regiment of British and Eurasian infantry; these weapons would be simply *regimental automatons*, commanded by one of the subalterns, and worked by a detachment composed of three men from each company. They should be mounted for mule carriage and without wheels; they would be always with the regiment during peace time, but on active service, would be disposed according to the orders of the Brigadiers. That would give us 156 machine guns in addition to those in the forts. It is simply untrue to say that machine guns can be only worked by trained artillerymen. Why in reality those are the only men who should not be allowed to touch them; and as for the weapons being unreliable, as some say, the whole idea is absurd; other nations (notably Russia) can and do use them, and so can we.

I have put down two Eurasian regiments of 1,000 privates each, one of which I would have in the Bengal Army Corps, and the other in Madras for Ceylon, or in the Bombay corps.

A score of objections will of course be at once raised to such regiments, but for my part I believe that they would be most reliable in every way, and of special value for garrison duty in certain important stations which are not considered healthy for Europeans.

Most people believe that Eurasians are good for nothing, but I am quite certain that if they are judiciously selected, no limit being placed on the age, and well fed and cared for, there will be no difficulty

in getting three or four thousand men who would be far superior in every way to the *boys* that come out from England now. The Eurasian is, as a rule, very poor, and he feeds cheaply and poorly, consequently he is somewhat inferior in physique; but once get hold of him young (eighteen years of age), feed, clothe, and house him well, and he will soon become a different man altogether.

Pay.—Under the existing regulations a private soldier in India receives the same pay as in England, one shilling a day; in addition to which he is credited with an addition of twopence a day, which is called deferred pay, and which (subject to deductions for misconduct) is placed to his credit and paid to him on passing into the Army Reserve or on being discharged; he also receives good conduct pay at the rate of one penny a day after two years' uninterrupted good conduct, twopence after six years, threepence after twelve years, fourpence after eighteen years, fivepence after twenty-three years, and sixpence after twenty-eight years; but from this one shilling daily pay, certain, or rather I would say *uncertain*, deductions are made on account of groceries, extra messing, and summer uniform. Instead of this I would propose the following for a private soldier:—

One shilling a day pay clear.
Full rations free with no extras.
All clothing free (uniform).
Washing and hair-cutting free.
No deferred pay.
A free kit to be given on joining, each article of which should be made to last a certain time, after which it should be replaced by the State, but any article lost by neglect, or wilfully destroyed, to be replaced by the man himself.

Extra pay for long service (daily)—

Threepence	after	5 years'	service.
Sixpence	,,	10 ,,	,,
Ninepence	,,	14 ,,	,,
One shilling	,,	18 ,,	,,

Good conduct pay (daily)—

One penny	after	2 years'	uninterrupted good conduct.
Twopence	,,	6	,, ,,
Threepence	,,	10	,, ,,
Fourpence	,,	14	,, ,,
Sixpence	,,	18	,, ,,

Both long service and good conduct pay being liable to be forfeited for misconduct, by sentence of Court-Martial, or by order of the Commanding Officer, under certain fixed rules.

Lance-corporals to receive threepence a day extra pay.

Corporals and sergeants to receive same pay as at present, with additional pay for length of service and good conduct; free rations, kit, and clothing the same as a private. The same rules to be applicable to the other branches of the Service; the actual pay proper in each remaining as it is at present. Eurasians to receive same pay as West Indian regiments, and free rations and clothing.

Pensions.—Pensions should be on three scales; one to be paid after fourteen years' service, another after seventeen years, and the third after twenty-one years.

Rank.	After 14 years.	After 17 years.	After 21 years.	
	s.	*s. d.*	*s. d.*	
Private ..	1	1 6	1 8	Gunner, driver, trumpeter, &c.
Corporal ..	1	1 8	1 10	Bombardier and corporal.
Sergeant ..	1	2 0	2 4	After 5 years in rank.
Warrant officer	..	2 4	3 0	After 5 years in rank.

For Europeans and Eurasians alike.

All service to count for pension from the day of enlistment, except the time passed in prison on conviction of certain specified heinous offences by Court-Martial.

Should a man fail in health and be invalided home before his term of service expires, he should be at once discharged and posted to the Reserve, or allowed to join the home army, no matter what his age may be, for a short term of home service, provided that he be considered physically fit for it.

Special rates for wounds on service, &c.

Punishments.—A little more common sense and justice should be exhibited in punishing soldiers in India than is the case at present.

Flogging up to fifty lashes should be allowed in addition to imprisonment for certain very grave offences, such as gross insubordination and violence to superiors, theft, and very disgraceful conduct; but such flogging should take place inside the walls of a regular military prison.

During the time that a man is in prison he throws additional work and duty on his well-behaved comrades, and his services are lost to the State, therefore I would advocate flogging and forfeiture of long service pay as the chief punishments, and dismissal from the service without pension for continued misconduct. Sir Frederick Roberts in his able article in the "Nineteenth Century" on "Free Trade in the Army," pays particular attention to this system of punishments.

Officers.—The Officers of an infantry regiment should consist of

28 {
- 1 Colonel or Lieutenant-Colonel to command.
- 2 Field Officers commanding wings.
- 8 Captains commanding companies.
- 16 Lieutenants.
- 1 Adjutant, Captain, or Lieutenant.
- 1 Quartermaster.
- 1 Surgeon-Major. } Regimental.
- 2 Surgeons. }
- 1 Paymaster.

The pay and allowance of each rank to be the same as at present,

and all to be under the same pension and furlough (1868) rules as govern the Officers in the present native army, except that *all* leave in India, and *bonâ fide* sick leave out of India up to a limit of three years, should be allowed to count towards service for pension. All Officers should be allowed to exchange with others of the same rank, in any regiment, battery, or battalion of the home army once only, the Officer going to India coming under all the Indian rules for pay and pension, &c., and *vice versâ*.

All first appointments to be made as now from the military colleges (choice of regiment or army corps being allowed) except to the Eurasian regiments, candidates for which will be numerous in India, and might be allowed to pass a qualifying examination before a Board of Officers in India, and then do duty for a year with a regular British battalion, to learn their drills.

Promotion would be in all cases as at present.

It should be allowable for an Officer to receive money for retiring or for exchanging, but in no case should such retirements or exchanges take place without the approval of the senior Officer, and the sanction of the Commander-in-Chief.

All Officers to be allowed to serve with native regiments or batteries, and to be eligible for any appointment in the Commissariat, civil or any other department under the Indian Government, but on doing so he should be obliged to leave his regiment and join the Staff Corps.

A special Staff College for the training of Officers for the Staff of the army (British and native) to be established at some place like Roorkee or Poonah, or in the hills; all Officers holding Staff appointments to be seconded in their regiments.

A special musketry training establishment for the training of Officers and non-commissioned officers of the *whole* army to be at the same place as the Staff College, for the sake of convenience and economy.

Recruiting.—At first, and probably for the first two years, it would be necessary to obtain recruits as at present, to keep them six months with the existing depôts in England, and then to send them out in batches under command of Officers who were at home on leave, or specially told off for the purpose; but during this time the Government of India would be building large barracks for depôts in some selected hill stations, such as Chukrata and Wellington, and as soon as they were completed the recruits could be sent out there directly after enlistment, trained and somewhat seasoned there for a year or eighteen months, and then sent to join the ranks of whatever regiment or battalion they pleased. I think that much money will be saved in that way by avoiding heavy depôt expenses in England; the young men will be getting well fed and looked after in a good climate, and will be learning their drills and the customs of the country at the same time, and will be ready on the spot in case of any sudden emergency requiring a number of fresh men quickly. But until those Indian depôts are established no recruit should be sent from England under twenty years of age, nor until he has completed his drill. In addition to the ordinary method of obtaining recruits as at present, I would strongly advocate the establishment by the Indian Government of

three or four military institutions to maintain, instruct, and train for the Indian army, lads from fifteen to eighteen years of age who would be received from reformatories, industrial and other schools, and from other places, and would be kept at the institutions for a year or two, until they were fit to go out to join the depôts in India: each of these might be made capable of sending out 500 smart, intelligent, educated lads yearly; in fact, so great are the numbers of lads in this sort of places that there would be no difficulty, and I venture to say no objection either, in supplying recruits enough for the whole local army. The idea is no new one, but has been advocated most ably at different times by such men as John MacGregor, Esq., M.A., Chairman of the Industrial Schools Committee of the London School Board in 1875; by Major H. L. Geary, R.A., in 1877, and by Captain Bedford Pim (*vide* Journal of the Institution for those years).

There are of course many objections to a short service army being recruited in that way, but there is no reason whatever why the plan should not be most successful for a local Indian army, while at the same time it would be most beneficial for society in England. These lads, homeless and friendless, without money or occupation, would become useful soldiers and good citizens instead of joining the ranks of the thieves and loafers, and filling the public-houses, prisons, and workhouses of the kingdom.

When talking about service in India, it must be recollected how many openings there are for a well-educated steady man, in the Commissariat, Public Works, Barrack, and other Departments, and that after the completion of their time they can often obtain good employment on the railways, in the police, civil prisons, &c.

Anyhow only the healthiest and strongest recruits should be selected, rejecting all having the least disposition to any serious complaints, or of whose capabilities to withstand hard work there is any doubt. Nothing can be more foolish than to pass a young man with a tendency to consumption on the notion that he will do well enough in India; but special attention should be paid to the age for those recruits enlisted in the ordinary way and sent out before the Indian depôts are ready.

I am inclined to recommend that after three years' residence a man might be allowed the option of remaining on for a pension or of returning to England to complete a term of short service with the other battalion of his regiment, provided that there are men at home to take his place, and that the strength of the Indian battalion is not reduced.

Of course a great deal of extra cost will be entailed by such an army, but a great saving will be made by substituting four *Corps d'Armée* for the present Presidency armies, and there are also many other ways in which money may be saved for the purpose—for instance, in the pay or allowance of civil engineers and police officers; for it surely was never contemplated that a young civil engineer should be able to live comfortably and yet save large sums of money during his first five years in the country, whereas his brother in a line regiment has also lived well but quietly and yet not been able to

save a single sixpence; the reason of this is that the former receives regular pay equal to the latter, and sometimes more, and in addition to that he receives large sums monthly on what they are pleased to call "travelling allowances," which in my opinion is waste of money.

There are many details which I have not touched on, such as the grant of furlough with free passages to non-commissioned officers and men; the manufacture of all clothing, stores, &c., in India, and other matters, which can be easily settled afterwards when once the main points are settled.

The local army can be started at once, and completed by April, 1885, and the present organization in the Imperial army lends itself to the easy formation of a separate force for India.

First perfect the plan; then publish the terms to the army and the country, and above all things let it be well known that although it is to be a local army, yet it is a Royal army just as much as the home army, only it will take men for long service and pensions instead of for short service and no pensions.

Then select any fifty regiments of infantry, regiments of cavalry, and batteries of artillery, either those now in India, or the first numbers on the Army List, for the infantry, make one battalion entirely for service in India, and the other for home service only; call for volunteers from both battalions for long service in one place or short service in the other; exchange all men at once who wish to come home for those who wish to go out, and make up the Indian battalions to full strength by recruits, or volunteers from other regiments. Do the same with the Officers, and I have no hesitation in saying that by April next you will have a magnificent result, and that there will never be any difficulty in keeping up both home and Indian armies to the full strength.

The Indian army would in a few years be composed of none but able-bodied men all fit for service anywhere, and at the same time the short service system in England would be at once recognized and accepted, and the Reserve would be augmented steadily and readily.

After the first year the troopships should be sold, or put to some other uses, and the conveyance of recruits to India, and sick men home again, should be entrusted to private steam companies.

Some people who object to a local army contend that with our splendid railway system in India we can concentrate troops quickly on any given point, and that, therefore, a smaller number of efficient soldiers will suffice now than would have done twenty years ago; but that is a great mistake, for our railways are entirely unguarded and undefended, and can be destroyed at any moment, and moreover they can be equally used by the disaffected amongst our own subjects and by the semi-independent chiefs for collecting their forces at any time that they may wish to hamper us by creating disturbances.

The population of India is as follows:—

Under direct British administration	198,755,993
Of which the males number	101,292,049

Native feudatory States under our control	..	55,150,456
Of which the males number	..	28,684,722
The Mohammedans in all India are	.. ..	50,121,585

The combined armies of the native States amount to 305,235 men and 5,252 guns.

Remember the words used by the French Commission on the Organization of their Army after their last war with Germany. :—

"The army is the annual premium of insurance against foreign invasion, and the dismemberment of our territory. You cannot diminish the premium without at the same time diminishing the safeguard of the Empire; forgetfulness of this fact cost us two of our most patriotic provinces, and five milliards."

There was a bitter lampoon once written to this effect—

> "When war is rife and danger nigh,
> God and the soldier is all the cry;
> When battle is o'er and danger scouted,
> God is forgotten, and the soldier flouted."

There is food for reflection in that, and I hope the result of such reflection will be a throwing aside of all party cries, and a gigantic effort to prepare at once, so that when the day of trial comes we shall not be found wanting; for that trial will most certainly be in Asia, our whole and sole strength will then lie in our Indian army, and if that army be beaten, England will soon sink and disappear from her place amongst the nations of Europe.

ESSAY.

SHOULD THE EUROPEAN ARMY IN INDIA CONTINUE AS AT PRESENT CONSTITUTED, OR SHOULD IT BE CONVERTED IN WHOLE OR IN PART INTO A LOCAL FORCE?

By Captain J. K. Trotter, R.A.

"Unitate fortior."

Writers on popular beliefs tell us that every lady considers herself to be capable of boiling a potato and of writing a novel, and that in the mind of the ordinary English gentleman is firmly rooted the creed that, given the opportunity, he could handle an army so as to have out-manœuvred the great Napoleon. There is another belief, which, though perhaps not generally included amongst popular beliefs, is certainly no less commonly held than these. Deep in the inmost recesses of the heart of many an Englishman is cherished the conviction that to him, and to him alone, has been revealed the secret of reforming the organization of the Army. Outside of the Army this belief is common enough; in the Army itself it is almost universal. Indeed, almost the only exceptions to this rule are to be found amongst the small minority of those who take little interest in their profession. If any one is incredulous on this point, he has only to start the subject to a military man or a civilian interested in military affairs, in the presence of a non-critical audience, and he will probably let loose a flood of eloquence which will cause him in future to accept the proposition without seeking for proof.

The effect of this belief is that the country is flooded with books and pamphlets, and the periodicals and newspapers are filled with articles and letters all condemning the existing organization, and making proposals of every description, possible and impossible, for reforming it. One writer would return to long service; another would introduce very short service; a third would have universal service; a fourth would abolish the militia; a fifth would add 20,000 men to the Army. Thus while all agree in condemning what exists, there is a most complete Babel of opinions as to the method of improving it, and the direction which these improvements should take. Each reformer is, however, penetrated with the belief that he has been divinely invested with a commission to reconstitute the Army, and that it is only the blindness

of the public and the want of opportunity which prevent the country from accepting gratefully the benefits he is ready to confer. This being the case, it is necessary that any one who proposes to enter the already overstocked ranks of Army reformers should first seriously consider whether he has anything new to advance upon a question which has been so thoroughly discussed, and whether any proposals he may make are not only suited to the requirements of the country, but also in conformity with the numerous conditions by which the subject of Army organization in England is always limited.

The popular belief on the subject of Army organization, however, if it has no other effect, is at any rate an indication that the present state of affairs is not regarded as satisfactory. Indeed, there is probably no one who has examined the subject who will not be prepared to admit that our present organization is not on a level with the requirements of the age. The paramount importance of organization as a factor in war is fully appreciated in principle in this country; in practice, however, it has never yet been sufficiently recognized in our military system. It is this which has so completely changed, to our disadvantage within the last ten or twenty years, our relative position in Europe as a military Power. We have not been going backward during this period in organization or in positive military strength; on the contrary, we have made a distinct and perceptible advance, and, as our Parliamentary administrators are careful to tell us, we are now in a position to mobilize a greater number of men than at any time since the Napoleonic wars. Positive military strength, however, is no test of the security of a country; its position must be judged with relation to the strength of the nations which may possibly be deployed against it. It is from this point of view that our weakness is so apparent. Whilst we have been advancing by inches, other nations have been striding onwards by yards, till, at the present time, they have almost left us out of sight.

This state of affairs is due to numerous and complicated causes. In the first place the subject of organization differs from other military subjects, as tactics, drill, &c., in that it is closely connected with expenditure, and is not in the hands of the military authorities, but in those of the country through its representatives. Reforms of a comprehensive nature, it need hardly be said, are little suited to the chastened and sober interest taken by Parliament in military matters. With the majority of politicians the belief in the omnipotence of the traditional 30,000 British troops remains unchanged. Again, the recruiting question is a great difficulty in the system of organization. Opportunity will be taken to refer to this point later on. A third cause is the idea which, though unexpressed, it can hardly be doubted, is present in the minds of many politicians, that a well-organized army is a dangerous weapon. Those who hold this view regard a powerful military system much as the gentler sex and the officers of a court of justice are supposed to regard a firearm, as something that will go off in spite of all precautions. A fourth cause is the exceptional nature of our military requirements. This

brings us more directly within the limits of the subject under discussion.

The military requirements of the country are twofold. We require, in the first place, an army to furnish the peace garrisons of our numerous Colonial possessions, together with a reserve, available at any moment, to supply the force necessary to carry on the constantly recurring minor campaigns. Secondly, we must be prepared on rare occasions to develop the full military power of the country, when vital interests are at stake. A few years ago it was frequently stated that this second requirement existed no longer, that we had given up interfering in European affairs, and that war with a military Power was no more a contingency to be provided against. To-day little is to be heard of this doctrine. The events of the past few years have shown that it is no longer tenable. At the present time the two principal military Powers of Europe are devoting their energies to the acquisition of Colonies; in India our frontiers are almost contiguous with those of another Power; in Egypt our proceedings are regarded with watchful and jealous eyes by Europe in general and by the Mediterranean Powers in particular. With any of these countries we might, at any day, find ourselves in open hostility, and it must be remembered that, though the cause and object of a quarrel may be some distant possession, in Europe alone, can a final decision be obtained. Therefore, this point must be kept carefully in view in the organization of the Army.

To frame an organization fulfilling separately either one or the other of these two requirements is a matter of no special difficulty; to combine the two in one system is, however, an exceedingly complicated task, because the conditions which govern them are directly opposed to each other. And yet the two must be combined in one system, because, although the requirements of the Colonial Army do not necessarily affect those of the Home Army, yet, when vital interests are at stake, the whole Army, Colonial as well as Home, must be deployed side by side. This is the more important, because the Colonial Army forms so large a proportion (roughly speaking about half) of the Imperial British forces.

From the foregoing remarks it will be seen that the organization of the European Army in India must be regarded from two distinct points of view. Firstly, it must be considered as a part of the Imperial offensive forces, and, secondly, as a branch of the Indian Army. It follows, therefore, that the subject cannot be discussed solely and purely upon the basis of the requirements of India. It will be necessary to argue not from the part to the whole, but from the whole to the part, to seek for not that which is best for the branch, but what is suited to the tree; for it is only by this means that the efficiency of the European Army in India in its subordinate position can be best secured.

The special requirements of the Indian Army must, however, by no means be left out of sight. So long as they are kept in their proper relative position, it is of great importance that they should be fulfilled in the organization of the Army. The first part of this

paper must, therefore, be devoted to the consideration of the duties of the European Army in India, its special requirements from an Indian point of view, and the influence which they should exercise upon the organization of the force.

Duties of the European Army in India.

The duties of the Indian Army, of which the European force forms a part, may be classified generally under two heads, viz., (*a*) the preservation of internal repose, and (*b*) the securing of the country from external enemies. The first of these objects the Simla Commission on the organization of the Army[1] proposed to fulfil by maintaining troops at places likely to become centres of disturbance by keeping the main body of the army écheloned along the lines of rail, and by maintaining transport in sufficient strength to mobilize at once some combined tactical units. When disturbances arise within the country, a force is despatched immediately to quell them and to crush any elements of rebellion.

The second object, that of securing the country from attack from without, it is sought to attain in much the same way. Whenever any elements of danger or disturbance have arisen beyond the frontiers, which have threatened the external repose of the country, an expedition has always been sent to destroy them. Again when quarrels have arisen with different nations on matters connected with Indian policy, these nations have been attacked in their own territory. The history of India contains numerous examples of these two cases, amongst which are the wars in Afghanistan, Burmah, China, Persia, and Abyssinia; under this heading also may be included wars and expeditions carried out for Imperial purposes by combined forces from England and India, such as the wars of 1881 and 1882 in Egypt, and the Malta expedition, as in all these cases the question of the defence of India was indirectly implicated. In all these wars and expeditions the great principle of strategy and tactics, that the surest defence is the attack, has invariably been followed. In the defence of India, indeed, this principle has a double force, because into the defence of India the question of prestige and moral influence enters very largely. Recent events have brought into special prominence the question of the defence of the north-west frontier. It is surely important that the principle, which, in all other cases has guided our military policy, should not be left out of sight in this case. It is not intended by this to refer to the much-discussed question of extending our frontiers beyond the Suleiman range; the principle has in this matter a far wider application. Indeed, if a future struggle for India is to be fought out in India or upon the Indian frontiers, the invader risking nothing but his invading army, the prediction may safely be hazarded that the conquest of India is but a matter of time and opportunity. An invader may be unsuccessful once, twice, or oftener, but each failure will be merely a "*recul pour mieux sauter*." The

[1] I have not had access to the original Report of the Commission, but quote here and elsewhere from the extracts which have been published in different journals.

moral of this is that, to defend the frontier effectively, attack must be met by attack and invasion by invasion. By invading India an enemy must be made to risk the loss of something at least as great as the gain he hopes to secure. The disastrous moral effects of waiting to be attacked are well-known, and these have for some time past made themselves apparent by a restlessness and nervousness in all matters connected with the north-western frontier. This feeling might well find a vent in the preparation and organization of counter-measures, so that if the invasion of the country should ever be attempted, the result might be a positive advantage to us, and not merely at best a mere negative quantity.

This point may seem out of place in the discussion of the organization of the European troops in India; it is submitted, however, that the two questions are closely bound up together, and that the strategical principle of offensive defence is the parent of the great principle of modern organization, the development of offensive force. From this we learn that in the defence of India the Home Army is as much concerned as the Indian Army, that after providing for the reasonable security of the frontiers, all efforts should be turned towards the organization of a combined English and Indian force to be used for offensive purposes beyond the Indian frontiers. Applying this lesson to the organization of the Indian troops, it is clear that a uniform system should always be maintained in the Home and Indian Armies, as they may, on all important occasions, be called upon to act side by side, therefore in the two forces the organization, armament, equipment, *ordre de bataille*, and system of training should always be the same.

The European troops in India have occasionally another duty to fulfil, viz., to send single independent units to take part in colonial wars and expeditions. Corps about to return home have generally been selected for this duty, and, at the close of the campaign, have been sent on to England. In South Africa in 1881, for example, the 14th Hussars were brought from India, to take part in the Transvaal Campaign, but in this case the regiment returned to India. During the present year, regiments have been brought from India to take part in the Sûdan operations, and will probably be brought home at the close of the campaign.

The consideration of the duties of the European troops in India serves but to confirm the view insisted upon before, that it is impossible to discuss the organization of the force on the basis of the requirements of India alone, and to show that the direction of reform must be to increase and consolidate the offensive power of the Empire, and to render its military system more and not less expansive.

Special Requirements of the European Army in India.

The special requirements of the European Army in India may be best studied by examining them from three points of view: (*a*) the physiological question, (*b*) the economical question, and (*c*) the question of organization and training.

(a) *The Physiological Question.*—The physiological question has a special importance for the European troops in India. The climate of that country, it need hardly be said, is very trying to the European constitution, more especially to that of the inhabitants of Northern Europe. Its effect upon the health of the soldier shows itself in something of the following way. Upon first landing in India, most men suffer more or less from minor ailments, which, though not generally of a serious nature, are sufficient to render them temporarily unfit for service. A few men are so seriously affected that they have to be invalided after being in the country but a short time. The ailments are due, in part, to change of climate, and, in part, to the neglect, through ignorance or carelessness, of the sanitary precautions necessary in a tropical country. As time passes, the men become more acclimatized and more accustomed to the Eastern style of life, the percentage of sickness decreases, and, with the aid of the precautions they have learnt to adopt, they are better able to stand the effect of exposure to the sun. After serving a few years in the country, soldiers, as a rule, become acclimatized and attain their maximum physical efficiency. The ratio of sickness is then at its lowest. This condition lasts for some time, and then, by degrees, the rate of sickness increases, and the climate begins to tell upon the European constitution. Its effect is shown in various ways. The soldier is generally attacked by diseases peculiar to the climate, such as fevers, ague, liver and spleen complaints, &c. These ailments, when they once assail a man, almost always return, and sooner or later become chronic. The result is that the soldier, after having served a certain number of years in India, loses his natural elasticity of constitution, he becomes listless and inert, and is no longer upright and vigorous. This effect of the Indian climate is not observable in all old soldiers, but in a very great majority of those who have been many years in the country, and it is clear that men who are subject to chronic forms of disease, which may render them temporarily inefficient, are little better than an incumbrance on active service, where they will be exposed in a special manner to the influences which tend to generate the seeds of these diseases.

It is found by experience that the Officer maintains his physical efficiency in India much longer than the rank and file soldier. This is accounted for on the ground that Officers are less exposed to the influence of the climate, are in a better position to adopt sanitary precautions, are better housed and fed, and, lastly and mainly, are more temperate and prudent than the rank and file. The European soldier eats and drinks exactly as if he were in England, and in the matter of exposure is very reckless. All attempts to induce him to adopt a style of living more in accordance with the climate have hitherto been fruitless, because his habits are too dear to his heart to be lightly changed. The time has not yet arrived when he will consent to preserve his constitution at the cost of becoming a semi-vegetarian and teetotaler, or even of making any sensible reduction in his accustomed diet and beverages.

An important point in connection with the duration of a man's

physical efficiency in India is his age and physical condition on arriving in the country. Medical authorities lay down that no man should be embarked for India till his physical development is complete. Enlisted men, who have been born or brought up in India, are generally weakly and of inferior constitution, and in a similar way men who become developed after arriving in India are likely to be less able to stand the climate than those who have not been embarked till they were fully matured. The time of life at which a man attains his full maturity varies in every case, but it has always been held by medical authorities that no man should be sent to India till he is twenty years old, or till he has attained the physical equivalent of twenty.

Thus the two main points in the physiological question are the age at which a man should land in India, and the average time of duration of his physical efficiency in the Indian climate. The second point is dependent on the first; the more completely developed the man is before arriving in India, the longer will he maintain his physical efficiency. Therefore, it is important from this point of view that no man should embark for India till he is thoroughly matured.

With regard to the second point, it is impossible here to lay down authoritatively the length of time a man may be expected to serve in India without losing his physical efficiency. This can only be learnt from carefully compiled medical statistics, backed by the opinions of the principal medical authorities. The following opinion, however, based upon the official testimony of medical reports, may be quoted here:[1]—"On the point of service in India it has been ascertained that men deteriorate rapidly after eight years' residence in that climate. The sickness, as a rule, is greatest in the first and second year spent there, the average health then improves in the third, fourth, and fifth years, and is thus maintained up to the eighth year, after which the rate of mortality and invaliding rapidly increases. The opinion, however, frequently expressed, that soldiers who have served in India, even for a short period, are by that service rendered unfit for duty elsewhere, and will prove worthless in the Reserves, is opposed to general experience."

The effect of a residence of some years in India upon the constitution disappears more or less completely after some years in England, and a man would probably return to India invigorated and fit for active service, who a year or two previously had left the country debilitated by the tropical climate, provided always that he had not served so long in India as to be completely worn out. It might be reasonably expected, therefore, that men, who had served in India as long as they maintained their efficiency, would after a year or so in England, be again fit for service in India for a short period. Such men would be fit for active service immediately, and would not have to go through a period of acclimatization.

(b) *The Economical Question.*—In considering the economical question, expenditure must be regarded as the price to be paid for efficiency, and thus, for a given expenditure, the efficiency should be as great as

[1] "Mobilization and Embarkation of an Army Corps." Lt.-Col. A. Furse, p. 86.

possible, or for a given standard of efficiency, the expenditure should be a minimum. The main items of expenditure to be considered here, are (1) recruiting and depôt service, (2) pay and pensions, (3) transport between England and India. With regard to the first of these items, it is clear that, from a financial point of view, it is important that the depôt service should be as short as possible, for men at the depôt are non-effective, or, at best, only partially available for service in India. The expenditure on pay should be so arranged that the maximum number of men receiving pay should be efficient. Therefore, for economical reasons, it is desirable that men should not arrive in India till in a condition to stand the climate, and, after being acclimatized, should remain in India as long as they retain their efficiency. To pay men who are non-effective is clearly a waste of money. This does not apply to men receiving pensions, for a pension is part of the price to be paid for substantial services rendered; but it applies forcibly to the case of men who, from physical or other causes, are non-effective when borne on the strength of their corps. To reduce the transport service between England and India it is necessary that the troops of the Indian Army should serve their full time in India, and should only be withdrawn from the country when their service with the colours is completed.

From these considerations it appears that the economical and physiological questions follow closely upon the same lines, and are intimately connected with each other. The latter question regulates the time of service in India, and the former shows the necessity of adhering to the conditions of the latter. Thus it may be said that financial reasons render it desirable (1) that men should be enlisted at, or as near as possible to, the age when they have attained their full development; (2) that their depôt service should be as short as possible; (3) that they should remain in India as long as they retain their physical efficiency; (4) that they should be discharged or pass to the reserve as soon as the climate begins to take effect upon them.

(c) *The Question of Organization and Training.* — The question of organization, as far as the present subject is concerned, is a matter of comparative simplicity, because the European Army in India consists solely of combatant troops of the three arms, cavalry, infantry, and artillery, and in the distribution into higher units, Divisions, Army Corps, &c., it is combined with native troops of the Indian Army. The main points, therefore, to be considered here, are (1) that the European troops should be kept up at least to the minimum strength considered necessary by the Indian authorities, (2) that the units should be of such strength as to be effective, and that they should be capable of rapid mobilization, and (3) that reserves should be forthcoming to make good the losses from various causes.

With regard to the peace strength and mobilization of the units, it is clear that these, being so far distant from their sources of supply, must be mobilized from their own resources, without drawing upon the depôts at home. Furloughed men in England cannot be mobilized and handed over to their corps in India under about six weeks as a minimum. An expansive system is, therefore, quite unsuited to the

European troops in India. Under certain circumstances, indeed, as in the case of a war in Egypt, or at some theatre between India and England, it would be possible to let corps pick up their reserve men at the base, but this is an exceptional case which cannot be specially legislated for. It follows, therefore, that each unit should, on a peace footing, be maintained at such strength that, on mobilization, it could take the field without waiting for reinforcements from home. A weak corps in the field is of very little use, and, if reduced by losses and sickness, soon becomes ineffective as a tactical unit. It is imperative, therefore, that each corps should be able to mobilize a certain minimum effective strength under all circumstances. This minimum may be taken at 800 bayonets per infantry battalion, 125 sabres per squadron of cavalry, and 6 guns per battery of artillery. In addition to this, each battalion of infantry, regiment of cavalry, and administrative unit of artillery must form a small depôt on mobilization to take charge of the sick, prisoners, families, and regimental property, and to receive and forward reinforcements from home. This duty, in case of partial mobilization, might be undertaken by corps not detailed for service, but in case of a general mobilization, the formation of depôts would be necessary. Therefore the units on a peace footing should be of such strength that, deducting the average percentage of sick, prisoners, and men otherwise ineffective, and those to form the depôt, they could always mobilize men enough to make up the above minimum.

A reserve of trained soldiers will always be necessary to make good losses. In the case of the European troops in India the necessity for such a reserve is greater than in ordinary cases, because it is not likely that the units, on mobilization, will be able to put into the field men enough to exceed, except by very little, the minimum given above. They will, therefore, not be strong units, and a few weeks' campaigning in a trying climate will make them decidedly weak. The reserve should be a trained reserve, because it must be despatched at once. The troops in the field would soon feel the need of reinforcements, and, if fighting beyond the frontier, probably not less than two months must elapse before men on furlough could be mobilized, transported, and join their corps. The reserve, moreover, should consist of men who have already served in India, so that they may be exempt from the ailments common to men who have not been acclimatized.

The strength of such a reserve need not be very great. Its object is to supply the first reinforcement, and behind it again are the ordinary sources of supply. The annual draft would probably be despatched as early as possible, and it would be able to furnish the second reinforcement. Perhaps a reserve of from 10 to 15 per cent. of the war strength of each unit would be reasonably sufficient for all ordinary cases, if the ordinary sources of supply can be counted on to furnish the further reinforcements which would soon become necessary.

The numerical strength of the European Army in India is a matter of Indian policy. It has generally been held that it should be about half as strong as the native army. It should be noted, however,

that the real strength of an army is not measured at the present day by bare numbers, but, from the point of view of organization, by effective tactical units. There is always much that is vague and indefinite about numbers, some calculations including, others excluding, non-combatants, Officers, supernumerary ranks, &c., but a unit which is strong enough to be effective, and which has a definite place in the higher tactical formations, is a standard from which the strength of the whole can be calculated. Therefore, in considering the strength of the European Army in India, it would be better, instead of saying that it should be not less than 60,000 men, to say that it should contain at least so many effective units.

The question of organization is also closely connected with the economical and physiological questions. For example, by studying the last, and acting upon the laws which the examination of the subject reveals, we should have the greatest possible average of men in each unit always fit for active service. This result satisfies the conditions of the economical question, for the maximum number of men drawing pay would be effective, and it also satisfies the conditions of the question of organization, for the units on mobilization would be as strong as possible, with a given peace establishment. The limiting condition, however, is that they should be sufficiently strong to take the field as effective units. Thus to satisfy the conditions of the question of organization, (1) the European Army in India should be made up of a fixed number of units; (2) the peace strength of these units should be such that they could take the field with an establishment strong enough to be thoroughly efficient, after making all necessary deductions for non-effectives; (3) a small reserve of trained and acclimatized men should be maintained to supply the first reinforcement on mobilization.

The training of the men of the European Army in India must always be framed on the European model. It is true that in India they will mainly be employed against comparatively undisciplined and ill-armed troops, but at the same time, they are available for Imperial purposes, and must always be prepared to meet an European enemy. In such cases they will have to act alongside of the troops of the Home Army, and therefore, they should always be trained on exactly the same system, so that the two forces should be able to work together without friction.

From the examination of the special requirements of the Indian service we learn that there are certain definite points which should be fulfilled in the organization of the European force, provided that these do not run counter to the principles of organization of the national forces. These points are as follows:—

(1.) The European force in India should consist of a fixed number of units of the three arms.

(2.) These units should always be effective, and with this object they should be maintained in peace time on an increased war footing, so that, on mobilization, they may take the field at such strength as to be tactically effective, after making all necessary deductions for non-effective men.

(3.) A small reserve of trained and acclimatized men should be maintained to supply the first reinforcement on taking the field.

(4.) The rank and file should be enlisted as nearly as possible to the age when they have attained their full physical development.

(5.) Their depôt service in England should not be longer than absolutely necessary, but they should on no account be embarked for India till their constitutions are fully matured.

(6.) The length of service in India should be regulated with reference to the average maximum time of duration of the soldier's physical efficiency in the Indian climate, as determined by medical statistics and the opinion of medical authorities, and it should correspond with this period. During the period of their service, or at any rate during a period equal to the maximum duration of the soldier's physical efficiency, the rank and file should serve in India only.

(7.) Rank and file soldiers should not be transported between England and India, or *vice versâ*, except at the commencement or termination of their Indian service, or when invalided or withdrawn from the service from exceptional causes.

(8.) The training must be carried out on the European model.

In applying these conditions to the organization of the European troops in India, however, it must be remembered that the first condition of all is that the organization must provide for the maximum development of offensive power of the combined Imperial forces, and that, therefore, the Indian organization must fit into that of the home and colonial armies, and the whole must closely be welded together, so as to be suited for combined action. Further, the organization of the Indian Army must not be altered so as to reduce the expansiveness of the whole.

The Existing Organization.

Having thus obtained some sort of a basis for the organization of the European Army in India, the next step is to consider the existing organization, and to inquire how far it fulfils the general and special requirements which, as has been shown in the first part of this essay, should govern the question. In doing this it will not be necessary to describe, except in the briefest way, the present system and the constitution of the force, since this is so well known and understood as to need no explanation.

The European Army in India numbers roughly 60,000 Officers and men.[1] This force is distributed into—

9 regiments of cavalry, each of 3 squadrons—
Strength, 22 Officers, 46 sergeants, &c., and 408 rank and file; total, 476, with 396 troop horses.

10 batteries of horse artillery—
Strength, 5 Officers, 11 sergeants, &c., and 146 rank and file; total, 162, with 6 guns.

[1] 61,591, Army Circular, May, 1884.

40 batteries of field artillery—
Strength as for horse artillery.
6 batteries of mountain artillery—
Strength, 5 Officers, 7 sergeants, &c., 80 rank and file; total 92.
4 heavy field batteries—
Strength, 5 Officers, 11 sergeants, &c., 84 rank and file; total, 100.
17 batteries of garrison artillery—
Strength, 5 Officers, 8 sergeants, &c., 110 rank and file; total, 123.
50 battalions of infantry—
Strength, 28 Officers, 64 sergeants, &c., 820 rank and file; total, 912.

The rank and file are enlisted for 12 years' service, of which 7 is with the colours and 5 with the reserve; but should their 7 years' service with the colours expire when they are in India, they are held to serve for 8 years with the colours and 4 with the reserve. Endeavours have been made recently to induce men, by means of bounties, to extend their colour service in India to 12 years, so as to spend the whole term of their engagement with the colours. When a regiment or corps leaves India, men are encouraged to remain in the country, and are allowed to serve in any regiment, &c., which they may select.

The regiments and corps in India are periodically relieved. In the past, it has been the custom to relieve corps after from 10 to 12 years of Indian service, and the average number relieved annually has been about 1 regiment of cavalry, 4 battalions of infantry, and 7 or 8 batteries of artillery.[1] Twice this number of units were, therefore, transported each relief season between England and India. It was stated by the War Minister a year or two ago that it was proposed to relieve corps in India less frequently than formerly, the Officers and non-commissioned officers being relieved independently of the relief of their corps. In support of this a general order was issued in 1883,[2] allowing all Officers, warrant officers, and non-commissioned officers of infantry and artillery, after eight years' service at home or abroad, to enter their names for service respectively abroad and at home with the corresponding branch of their corps.

The relief of corps in India is a matter of considerable importance in connection with the organization of the Indian Army, and it will be necessary to examine the system somewhat in detail. First, let the case of a corps proceeding to India be considered. Some three months or even more before embarkation, preparations are commenced for the approaching move. The corps will have an establishment slightly in excess of that required for service in India; nevertheless, it will be necessary to remodel it more or less completely. Many of the non-commissioned officers and men will be too near the close of their

[1] During the relief season of 1884–85, 3 battalions of infantry, 1 regiment of cavalry, 2 field and 2 garrison batteries are to embark for India, therefore twice this number of units will move.

[2] G.O. 9, 1883.

service to be embarked, some will be too young, others medically unfit. Some men will have to be handed over to the relieving corps or the depôt, others will have to be received from these or other sources. In connection with the men received or transferred, the staff of the corps will have a great deal of correspondence and documentary work to carry on. Again, with regard to clothing, regimental necessaries, equipment, arms, ammunition, local and regimental funds, barrack damages, &c., an enormous amount of labour will devolve upon the corps, and correspondence will commence which will probably not be terminated till the corps has been a year or more in India. During all this time the ordinary training of the troops is greatly interfered with, and for some time it is suspended entirely. The Officers are employed on numerous committees, and the rank and file are frequently required for fatigue duties. Officers and men, too, proceed on leave by detachments till the time of embarkation is close at hand. Finally the corps embarks, and after a voyage of about a month reaches India. Then follows a journey up country lasting from a day to a week, and the corps at last reaches its station. Then commences a life to which all the troops, except perhaps one or two Officers and non-commissioned officers, are strange. Several months must elapse before the men get thoroughly settled in Indian ways, and it is not till the corps has been in the country some months beyond this time that it is fit to undertake any duty out of the common run. The complete acclimatization of the men is, as stated before, a matter of one or two years.

In the case of a corps returning home from India the effect is the same, the difference being only one of kind. Some months before embarking, volunteers are called for to join corps remaining in India. Then the corps has to go through the labour of making up documents, transfer of men, correspondence, committees, packing of regimental property, &c. Then follows, perhaps, a march down country, or a railway journey of several days, ending with a stay of six or seven days at the embarkation depôt. Finally, the corps embarks and sails for England. On arrival at home it is for a time more or less demoralized. The men proceed on furlough with their pockets full of money, and are for some time beyond the control of authority. Meanwhile, many are transferred to the reserve or to the depôt, and when the men are finally brought together, the corps is but a skeleton. It is reduced to about half its former strength, and the rank and file consist of a few old soldiers and a large number of freshly enlisted recruits.

The difficulties are still further complicated when the corps proceeding to or from India is mounted. In this case special arrangements have to be made for handing over horses, saddlery, &c., and for looking after the horses till the arrival of the relieving corps.

The practical effect, then, of the system of relieving regiments and corps is that, in the first place, each unit on moving to or from India has to be remade and reorganized, and becomes a new formation grafted upon a nucleus of Officers, non-commissioned officers, and men who remain unaffected by the movement of the corps. It is to be observed,

moreover, that this remodelling of the corps is quite a different thing from the reorganization which occurs on mobilization. In the latter case, the men who join the colours are, or should be, men who have served before in the corps, and are all old soldiers known to the Officers and non-commissioned officers. In the former case, on the other hand, they are transfers from the depôt or from other corps, and in almost every case are very young soldiers and unknown to their Officers and non-commissioned officers. In the second place, the training of the men is greatly interfered with for a period of from three to six months, and for a considerable part of this time is entirely suspended.

The system has a further effect upon the corps of the Home Army, which acts upon their organization in a peculiar way. The average strength of a corps on the Indian establishment is much greater necessarily than that of a corps on the home establishment, the former being on a war footing. Therefore, if the corps of the Home Army had each the same establishment, on proceeding to India it would be necessary suddenly to add a large number of all ranks to them to bring them up to the Indian strength. The inconvenience and the practical impossibility of doing this has led to the system of placing corps fresh from foreign service on a low establishment, and gradually increasing them as they advance on the roster. Hence, the sliding scale of establishments. In the infantry, for example, we have 48 battalions at home with an establishment each of 520 rank and file, 4 of 650, 4 of 750, 4 of 850, and 11 of 950, the strength of an Indian battalion being 820 rank and file. In the cavalry and artillery, the difference between the lowest and highest establishments is not so great as in the infantry. In the former service there are on the home establishment 13 regiments with an establishment of 410 rank and file, and 4 with 542 rank and file, the Indian establishment being 408 rank and file. In the artillery, the weakest batteries have 100 rank and file, and the strongest 150, the Indian strength being 146. It must be noted, however, that the sliding scale of establishments, though originally called into existence by the foreign relief system, is not maintained at the present time exclusively for the purposes of this system. Since the introduction of short service it has been found necessary to keep a certain number of units on the home establishment on a war footing to carry out the constantly recurring minor campaigns. To call out the reserve on every occasion of a small war was clearly unadvisable, and the only alternative was to make a few corps strong by weakening others.

Drafts to Indian Corps.—The units on the Indian establishment are fed during their stay in the country from the depôts and affiliated units at home. In the infantry, the home battalion of each double battalion regiment is mainly drawn upon to feed the Indian battalion, and it is calculated that about 150 men are required annually to supply the waste in the latter. In the artillery, the Indian batteries are fed from the depôts and from volunteers taken from the batteries at home, and in the cavalry the men are obtained mainly from the regimental depôts.[1] The year before the relief of a corps in India it receives no

[1] Each cavalry regiment on going to India leaves two troops at home as a depôt.

draft so as to be gradually reduced to the bottom of the sliding scale of establishments.

Command and Administration.—The Indian Army, both European and native, is directly under the Government of India, and through it under the India Office. The executive head of the Army is the Commander-in-Chief in India. He may be selected either from the Indian service or from the Home Army. The appointment is made by the Government of India, but it generally consults with the authorities of the War Office. The War Office has no control whatever over the troops of the native army, nor has it any direct authority over the European troops quartered in India, though in matters of organization and training these conform to the regulations issued by the War Office. The troops of the European Army cannot, therefore, be withdrawn from India without the consent of the Indian Government. A certain amount of friction exists between the India Office and the War Office, as, indeed, is only to be expected, considering that the interests of the two departments are, in most matters, conflicting. From this method of administration of the Indian Army many difficulties are placed in the way of organization, as there are two distinct armies with different administrations, one of which is partly composed of troops borrowed from the other, over which the latter has no control.

The Defects of the Present System.

The foregoing brief description of the present system will have given the key to its most serious defects. First amongst these may be placed the system of enlistment and service in India. Recruits are enlisted indifferently for service at home or abroad, and, as has been pointed out above, the term of service in India is, in theory at least, only a year longer than at home. The entire Army, in fact, comes under the conditions of the so-called *short service system*, modified as they have been from time to time. The question of the suitability of the *short service system* to India has been discussed *ad nauseam*, yet it is imperative once more to reopen the subject nere.

India and Short Service.—A mobile unit under the *short service system* consists, as is well known, essentially of two categories of men, viz.: (1) the men present with the colours on a peace footing, and, (2) the furloughed men, or reservists, as they are not very correctly named, seeing that they belong to the 1st Line. The men of the first category are the youngest, best drilled, most active, and most reckless, but at the same time the least hardy; those of the second category are older, steadier, more matured, and better able to stand the privations of a campaign. The former represent the element to high spirits and activity; the latter the stiffening element. Now it is an important principle of organization that these two classes should be present in their fixed proportions in every mobile unit. A unit mobilized by the addition of drafts from other corps, so that it contains only men of the first category, is no fair representative of the

short service system. The same remark is equally applicable to a corps which is mobilized by grafting a very large relative number of furloughed men upon a nucleus of colour soldiers. It may be objected, that in the modified form of short service at present in force with us the two categories are both represented, and that the seven or eight years' service with the colours of the British soldier is equivalent to the combined and reserve service of the Continental soldier. This objection is, however, inadmissible, because the majority of our soldiers, as is well known, are enlisted very young, whereas in the armies of the Continental Powers no man is enlisted before his twentieth year, and a very large proportion of the annual contingent consists of men who have been put back one or more years, and are in their twenty-first, twenty-second, twenty-third year, or even older.

It is evident that, in the case of India, the second category, represented in the short service system by the furloughed men, must always be present with the colours, as it has been shown before that the units must be mobilized for their own resources. Therefore it follows that the principles of the short service system are not properly applicable to India. This is a conclusion which the Indian authorities have long ago arrived at. The Simla Commission, it appears, strongly protested against the system as unjust to the tax-payer and detrimental to efficiency. It has no doubt been retained in India partly with the object of feeding the reserve, and partly because of the difficulty of having different conditions of enlistment for corps at home and abroad. It is doubtful, however, if the reserve has gained by the application of short service to India, because the requirements of India have led to the extension of the colour service on several occasions, and inducements are continually offered to men in India to pass their entire term of service with the colours. In this matter it is plain that the interests of the Home and Indian Armies are directly opposed to each other. In the question of length of service they stand, as it were, at opposite ends of a stretched cord; whatever is gained by the one is lost by the other. Thus the introduction of short service was a considerable gain to the Home Army; it was an equally great disadvantage to the Indian Army. Bit by bit the latter has been recovering since this took place, and has time after time snatched some advantage from the Home Army. The term of service has been extended from three to five, seven, and eight years, and men are induced to extend their colour service to twelve years. In this way the most pressing demands of India have been staved off, but at the same time the formation of the reserve has been retarded. At the present time neither one service nor the other is pursuing the course it would if free to go its own way; each is hampered by the necessity of giving way to the requirements of the other.

This point is of great importance to the organization of the Indian Army. It shows that in the matter of length of service there is a fundamental difference in the requirements of the two forces, and that it is impossible to bind them both together with one chain.

Relief by Corps.—The second defect of the present organization is the system of relief by corps. The disadvantages which this system

gives rise to have been pointed out above in the description of the system. There remain, however, some further points to be noted here.

The evils of the system are as follows :—

(*a.*) The disorganization and reconstruction of the units moved.

(*b.*) The loss of time resulting from the interruption of the training and drill.

(*c.*) The expense to the Indian Government of moving men from the country who have spent but a short time there, and the expense and loss of efficiency in bringing into the country men who have to be acclimatized in place of those who are at the height of their efficiency.

(*d.*) The sliding scale of establishments of the Home Army.

With regard to the last-named defect it is hardly necessary to point out that it is directly opposed to the principles of modern organization. Its effect is to reduce the offensive power of the corps at home very much below the standard they would attain if their establishments were all equal. To illustrate this it is only necessary to glance at the case of the infantry battalions at home. Suppose a general mobilization to be necessary after the despatch to India of the annual draft of 150 rank and file. In such a case, to mobilize the battalions on the lowest establishment they must be filled with the furloughed men of the reserves. What then becomes of the fixed ratio which should be maintained between colour soldiers and furloughed men? On the other hand, the battalions on the highest establishment would consist mainly of colour soldiers. The whole Army would be made up of battalions of very different quality, some consisting mainly of old, others of young, soldiers. But this is not all. The regimental system would be seriously upset at the moment when its fruits ought to be reaped. In apportioning the reserves to the various battalions in batches of widely different strengths, it would be impossible to fill up each battalion exclusively or even mainly with men who had served in it. Thus many battalions would be filled with men quite unknown to the Officers and non-commissioned officers. *Esprit de corps* and regimental traditions can have little influence upon such men. This evil is the greater because, as a rule, the very corps which would require the most men from the reserve on mobilization, would be those who had passed the fewest men in the reserve.

From still another point of view, however, the transport of complete units between England and India in peace time is an evil. It has been shown before that all the units which move during a relief-season are more or less disorganized. In case of a general mobilization during the relief season these corps cannot be regarded as available for offensive purposes, not only for this reason, but also, more particularly, because they are for the time cut off from their base and their sources of supply. The corps proceeding to India, before they have actually embarked, must in fairness be allowed to be available on mobilization, but after embarkation the troops are separated from their regimental transport, service equipment, reserve ammuni-

tion, &c., and mounted corps and artillery are without horses and guns. Corps returning home are very weak, and cannot take the field as effective units till reinforced from England. Thus it appears that, as a principle of organization, the transport of corps between England and India is a defect, as, during the relief season, it reduces the number of units which can be rapidly mobilized, by withdrawing those *in transitu* from their bases or their stations where they might be put upon a war footing.

The disadvantages to which the relief of corps gives rise do not, it is important to observe, follow when corps in India are fed by annual drafts. In this case, there is no disorganization of units, except when the feeding unit gives up so many men that it is reduced to a skeleton. The training and drill of the men of the draft is only interfered with whilst they are actually being transported, for the cadres stand fast, and in both the corps they leave and that which they join, facilities exist for drilling up to the date of departure for India and from the moment of their arrival in the country. Again, when the corps in India are fed by drafts, and the units stand fast, the Indian Government gets the full benefit of the men's service. The system of drafts, moreover, does not render necessary the sliding scale of establishments, and, lastly, it does not reduce the number of units available on mobilization, for the cadres stand fast and remain within reach of their resources.

Numerical Weakness of Units.—The third defect of the present organization is the weakness of the establishments of the European Army in India. Taking first the infantry, it appears that a battalion which could put every man into the field would be able to turn out but 820 bayonets. Supposing the infantry battalion to be kept up to their fixed establishment, it is improbable that, allowing for sick, prisoners, &c., they would be able, on mobilization, to dispose of more than from 600 to 700 bayonets per battalion. The annual waste of a battalion in India is about 150 of all ranks, but in this number are included men passing to the reserve, who would be available for service on mobilization. Allowing for these it is clear that at best a battalion could at present only take the field a very weak unit. Recognizing this, the Simla Commission proposed to increase the strength of battalions to 1,044 rank and file, but they proposed to reduce the number of battalions in India from fifty to forty-three.

The cavalry regiments in India number 454 non-commissioned officers and men. They are organized in three squadrons, and thus each squadron has an average strength of 150. This may be considered a fair establishment, and the squadron might be expected to turn out 130 sabres. The Simla Commission recommended that the regiments should have four squadrons of 586 non-commissioned officers and men, and the number of regiments should be reduced from nine to six. This would give twenty-four squadrons with an establishment each of about 145, in place of twenty-seven squadrons of 150, and would involve a reduction of three squadrons.

The proposed organization would give the cavalry regiments a strength differing little from the war establishment of a regiment at

home. This may be considered sufficient, if the squadrons are not expected to turn out more than 120 sabres on an average, but it would add much to the efficiency of the cavalry as a whole, if the number of troop horses were increased, and the organization aimed at keeping the squadrons up to a "strength" of 150 sabres.

With regard to the field and horse artillery the case is the same as with the cavalry. The object of the present organization is that each battery should keep six guns in efficient working order throughout a campaign. For this purpose an establishment of 146 rank and file, if sufficient, is barely so, and leaves hardly any margin for non-effective men.

Before leaving this question it should be noted that in a good organization each unit must depend upon its own resources, and must not interfere with other units. A system of mobilizing a part of the Indian Army by drafts from corps in India, these corps being crippled for the time, and rendered mobile later by drafts from England, would be very disadvantageous, for it would for the time reduce the number of units available, and lower the value of each by mixing the men of different corps.

We have here some very palpable and very serious evils, which not only affect very disadvantageously the efficiency of the Indian Army for the performance of its own special duties, but also react with no less disadvantage upon the organization of the Home Army, and reduce very considerably the offensive power of the whole. Putting aside the point last considered, the weakness of the establishments of the Indian units, which, though a matter of considerable importance, is really a question of detail, it appears that the defects of the present organization are all more or less directly traceable to two main causes, viz.: (1) the existence of one uniform engagement for the men of the Indian and Home Armies; and (2) the regular periodical movement of complete units between England and India.

The system of separate command and administration of the Indian Army is, as has been remarked, a disadvantage from the point of view of organization of the Imperial forces, but it is left out of sight here, because it is a question which can hardly be considered as affecting the efficiency of the European troops in India, but is part of a larger subject connected with the federation of the offensive forces of the Empire.

Part II.

The Proposed Remedies.

Having in the former part of this essay examined the working of the present organization, and traced to their origin the defects which are so universally complained of, it remains to consider the systems which have been proposed as remedies. Before commencing to do this, it appears desirable to make a few remarks upon the conditions to which the subject is practically limited.

In the first place it must be remembered that there is a wide differ-

ence between reforms that are desirable from a military point of view, and those which are actually possible. It would be a matter of no great difficulty to draw up a form of organization which would unite all the most important advantages; but to induce the country to accept such a scheme is quite another matter. It must be always remembered that, whether for good or ill, our unwritten code limits all questions of organization in England. He who transgresses this code cannot expect to obtain a hearing; any proposals he may make are regarded as out of the range of practical legislation. The principal conditions which it is necessary to conform to are: (1) no reforms of a revolutionary nature must be proposed; (2) vested interests must not be interfered with; (3) constitutional forces must not be touched; (4) the military expenditure must not be increased; (5) the question of personal liability to serve must not be opened.

There is still another consideration which must not be left unnoticed. It is only during the present generation that the subject of organization has attained to the rank of a military science of the first class, and has become the object of careful study in all civilized countries. With us, unfortunately, the subject has been approached mainly as an abstract study. Only by great efforts, and with slow halting steps, have the authorities been able to guide the military policy of the country towards that goal which still appears almost as distant as ever. Still we are moving towards the goal, and it is of great importance that all changes of organization should be framed with a view to maintain the same direction, and if possible to make our progress more rapid. With this end in view it is to be regretted that the great principles of organization as understood at the present day, and their practical application in the military systems of the great Powers, have not been clearly and succinctly formulated, so that the direction and effect of all proposed changes might be gauged by them. It is not possible to attempt this task here: the limits of space and the conditions of the subject forbid it. It will be sufficient to call to mind that the great object of organization, so far as the living forces of a nation are concerned, is the greatest possible development of offensive force within the shortest possible time. It will not be necessary to quote here the numerous practical rules for promoting this object which are in force on the Continent, but one of these, which it is important to bear in mind in considering this question, may be recalled. This is that every unit of an army existing in peace time, if it is to be of any use for military purposes except as a depôt, must be so organized that, either from the resources present with it in peace time, or those immediately available, it can take the field at war strength within a few days after the order to mobilize is received, and can maintain itself at war strength throughout a campaign. Now it is not difficult to conceive of reforms which, though possibly for the moment increasing and consolidating the offensive power of the Army, are not in this sense progressive development. It would be possible, for example, by reducing the number of units to make a compact force of small dimensions, or it would be possible to make some units really effective by converting others into depôts. In favour

of such proposals there is doubtless much to be said. A system which is developed at a very slow rate is during the process of development in an incomplete condition, and therefore not to be trusted in the time of danger. The system of creating a small army by reducing the number of effective units would give an available force in the shortest possible time, and the need for such a force might arise in the near future, when it could be obtained in no other way. Nevertheless, to level downwards in time of peace is a dangerous expedient, and it is doubly dangerous in this country, where the numerical strength of the Army is so weak, and the number of units so small in relation to the duties which have to be undertaken in peace time, and the demands which in time of war would certainly be made upon our military system. It is, therefore, contended that it is indispensable for us to level upwards, and to make the utmost of what we have already. Our endeavour must, therefore, be in the first place to organize a means of rapidly mobilizing every unit which exists at present, and, without considering the question of increasing our forces, to oppose to the utmost any attempt to reduce the number of cadres, and thus to render the system even less elastic than it now is. The political conditions which control military matters with us make it impossible to create an army immediately; we must, therefore, look forward to the future, and keep clearly before us the goal to be aimed at.

A Local Army.

The first of the reforms suggested by the conditions of the subject, and one which has been constantly discussed, is the conversion of the entire European garrison of India into a local force, *i.e.*, a force which serves only in India during time of peace. It will be necessary to consider how such a form of organization could be worked, and what its advantages and defects would be as compared with the system now in operation.

The country is not without experience of a local army. The East India Company, it will be remembered, possessed such a force before the amalgamation of 1861; but it must not be forgotten that it was a comparatively small force, and was never able to undertake the defence of India alone. A considerable force of the Royal Army was always maintained in the country to supplement the local army.

The Army of the East India Company was in every respect separate from the Royal Army. It had a separate administration, a recruiting and depôt system of its own in England, and its Officers were trained at a separate establishment. The Officers and men had special rates of pay and pension, and special furlough regulations. If the local system were reverted to, it would be necessary in many respects to follow the lines of the East India Company's service. The local army must necessarily be administered in India, and through the Indian authorities. It would not be possible for the Home authorities to administer a force of which every part was permanently in India, where the conditions of service differ entirely from those at home. Again, a separate system of recruiting and separate depôts would

be necessary. The Home authorities would be very unlikely to encourage men to volunteer from the ranks of the Home Army to join the Indian Army; separate depôts and fresh centres, therefore, would have to be created, or those now existing to be apportioned between the two forces. The Officers might be obtained, as are those of the Indian Staff Corps at present, from the Military College, and the Officers of Artillery might be obtained from Woolwich. There would thus be no need of restoring an Indian Cadet College. The Officers and men would necessarily receive special rates of pay and pension.

In organizing the Army, the Indian authorities would be hampered by no conditions of deferring to the requirements of the Home Army. The men would be enlisted for such a period as accorded with the requirements of the Indian service. They would spend the entire term of their engagement in India, and would only return home on the completion of this term.

Advantages of a Local Army.—The advantages which would follow from this, as compared with the present, form of organization are as follows:—

(1.) The Indian Government would get more value for their expenditure by the increased efficiency of the rank and file. The efficiency would clearly be greatly increased, for men once acclimatized would remain in the country until their period of service were ended, and the system of withdrawing men at the height of their physical efficiency would be abolished, in fact the term of engagement would be arranged so as to suit the Indian Army.

(2.) The numerous defects occasioned by the relief of corps would disappear. The transport would be reduced to the lowest possible scale, and the troops moved would consist solely of men sent to India from the depôts on the one hand, and on the other of time-expired men, invalids, and men discharged from other causes. The training of the men would only be interfered with during the time of the voyage. The men sent annually to India would fall into the methods of life there much more rapidly than when complete units are sent out, for they would be surrounded by comrades, and looked after by Officers and non-commissioned officers, all of whom were acquainted with the peculiarities of Indian life. The disorganization which, as has been shown, is caused by the movement of units between India and England would be entirely avoided. Lastly, the Home Army would also reap considerable advantages if the Indian Army were separated from it. In its turn, it would be freed from the necessity of shaping the term of the soldier's engagement with a view to the requirements of India. It would be possible thus to revert to a more thorough-going form of short service, so that a reserve might be formed more rapidly. Again, the main reason for retaining the sliding scale of establishments would fall to the ground.

The advantages of the local army system, as compared with the present system, are beyond all question very great. The great evils which, it has been pointed out, are bound up with the present organization would be removed at once. Nor would the Indian service alone

be benefited by the change. The Home Army would be relieved of the great obstacle which stands in its way, and prevents it from adopting a form of organization suited to the requirements of the present day. The conditions of organization of the two services are in fact in some essential particulars directly antagonistic, and by severing the connection between the two, we should have, in the place of one unwieldy and unworkable system, two separate forces differing in most respects from each other, but each complete in itself, and at any rate much more efficient than either the one or the other ever can be under present conditions.

Defects of a Local Army.—This is one side of the shield; the reverse must next be examined. The local army system would, in certain particulars, give rise to defects which do not exist at present. Among these the following appear to be the most important:—

(1.) The special rates of pay and pension for Officers and men, and the furlough regulations for the Officers, would almost certainly add a considerable sum to the present expenditure. It would seem hardly fair to pay the Officers of the European Army at a lower rate than those of the Indian Staff Corps doing duty with native regiments. But even if their pay remained as at present, they must necessarily receive increased pensions, and be allowed furlough upon Indian pay. The rank and file also must be pensioned, and at a higher rate in proportion to the length of service, than the present long service pensions are calculated at.

(2.) The maintenance of separate depôts and a separate recruiting service would probably increase the expenditure of the Indian Army. The exact result of the introduction of the local army system in this respect could not be determined without considerable difficulty. It would depend partly upon the length of the soldier's engagement, which affects the number of men required annually, and partly upon the age of enlistment of recruits, which affects the length of time they remain at the depot. It would, therefore, not be fair to place much weight upon this point, although the present contribution of India to depôt and recruiting services would, almost certainly, be insufficient to cover the actual cost under the local army system.

(3.) The competition in the labour market for recruits. This was one of the evils of the East India Company's service, and it led to many abuses. If the two forces again become competitors, one or other service would certainly be the more popular, and the other would suffer in consequence. At the present time it is barely possible to get the number of recruits required annually; and if two-thirds or three-fourths of these were to prefer to serve in India, the Home Army would be unable to fill its ranks, or *vice versâ*.

(4.) The loss to the Home Army of India as a training ground. This would be a serious disadvantage. India is practically the only school where British Officers and men can be trained in large bodies. Manœuvres are there carried out on a large scale and under conditions very similar to those of actual war. The country is almost everywhere free for the movements of troops, and these are limited only by real obstacles and not by imaginary boundaries. Campaigns and

expeditions also are of frequent and almost annual occurrence, and are invaluable in promoting the fighting efficiency of all ranks.

In other ways besides these the experience gained by Officers from a tour of service in India is of great value as a means of educating them, and of fitting them for the active duties of their profession. Anything that takes an Officer away from the ordinary everyday life and what are regarded as necessities in a civilized country, and anything that puts him on his own resources is useful for this purpose, more especially when combined with even the smallest amount of roughing it. A voyage to India with a march up country in command of a draft is often a good test of the capacity of a subaltern. Nor are the Officers the only ones benefited by a turn of Indian service. What the Officer gains by experience in that country is gained also in a less degree by the non-commissioned officer. Service in India not infrequently brings to light qualities the existence of which had never been suspected at home. Moreover the non-commissioned officer is not in a position to travel on his own account, and unless sent abroad on duty, he would never see any country but his own.

Without enlarging further upon this point, it will be generally admitted that the loss to the Home Army of India as a training ground for all ranks would be a disadvantage so serious as to counterbalance many of the greatest reforms which could be introduced.

(5.) The Officers and non-commissioned officers of the Indian Army would serve only in India. This disadvantage is the antithesis of the foregoing, and its effect would be nearly as great. It has been remarked before that Officers maintain their physical efficiency in India longer than the rank and file; nevertheless there is a limit of time beyond which the climate begins to affect them. Officers who have served fifteen or twenty years in the country without having seen much of England cannot be expected to be as vigorous and energetic as those who have never left England. It may be objected that the Indian Army contains a number of men as physically able and as energetic as any in the Service, and this is no more than the bare truth; yet it would not be possible to refute the assertion that the majority of Officers do deteriorate physically after a long residence in India. The effect of this deterioration would be observable more especially in the case of ordinary regimental Officers, holding no appointment, and with no particular ambition to act as a spur to their energies. The practical result would be that the average Officer would bring much less zeal and energy to bear upon his work than if he were not subjected to the enervating influences of a tropical climate. Moreover, long residence in the country would tend to foster habits not calculated to promote the efficiency of himself or his subordinates. The case of the non-commissioned officer is similar, although he would not spend more than twenty-one years as a maximum in the country. But he would lose his physical efficiency sooner than the Officer, and many men, before their service was ended, would feel the effects of the climate. One result of this would be that the rate of invaliding of non-commissioned officers would be considerably greater than at

present; another that many, before they are qualified for pensions, would be of little value as instructors or commanders of the men.

(6.) The training of the troops of the Indian Army would suffer. This result must follow almost inevitably, as the Indian regiments would be cut off from all connection with troops trained in Europe. It is true that Europe and India at the present day are but a short distance apart, and Officers would be constantly going backwards and forwards. Nevertheless this would by no means make up for the effect upon troops serving in India of having regiments fresh from England quartered beside them, or of being moved themselves to England. The rubbing together of corps in which the Indian element is very strong with those in which the home element is most pronounced is an advantage to both services; and it is especially an advantage to those corps which have been long in India to learn by practical demonstration the new ideas which have sprung up in Europe, and how they are carried into practice. Such things can never be learnt properly from books and regulations, but only by copying the example of corps which have been trained in the atmosphere where they have been generated.

Again, the Indian Army would be employed on active service very frequently against uncivilized and semi-civilized nations, and very rarely, if ever, against European troops. This, in conjunction with the fact that it would have no practical experience of European systems of training, would doubtless incline the Officers to place the most weight upon, and to devote the most time to the practice of, that part of their tactical training which seemed most frequently to be called into requisition. Thus, if the Indian troops should be called upon suddenly to operate against a European enemy, there would be considerable danger of their being found behind the requirements of modern war.

The troops of the native army would also suffer from the same cause, for their training is directly based upon that of the European troops, and any defects in the latter would necessarily affect disadvantageously the former also.

The advantages and disadvantages of the local army system, which have been considered thus far, affect the efficiency of the Indian and the Home Armies as two separate and distinct forces. It remains still to be considered how the system will affect the working together of the two forces, and what will be its influence upon the development of the offensive power of the nation.

It was pointed out in the first part of this essay that the European troops in India must always be prepared to act in conjunction with the troops of the Home Army, and that the armament, equipment, training, and *ordre de bataille* must be the same in the two services. But, if the regiments and corps of the Indian and Home Armies never came into contact with each other, except at rare intervals on service, and if they were under different commanders and different administrations in peace time, it would inevitably be found that, when brought together in the field, differences in all these matters had crept in. The same regulation would be read differently in the different services, and the numerous modifications of European customs necessary in a tropical

climate would afford an excuse to the Indian Army to use the utmost latitude in following a system originated in England. Moreover, the Indian Army in its turn would have many customs which would be strange to a force which had never served out of England. In this way, when the two forces or any part of them should be employed side by side under one chief commander, friction would undoubtedly be generated, the same in kind, though perhaps less in degree, as results from the co-operation of two allied forces on the same theatre of war.

Again, it follows for obvious reasons that the Indian Army would be less fitted for employment in Europe, and the English Army for employment in India or in a tropical country than under the present system. Therefore, when the two forces were acting together, in whatever part of the world it might be, either the one or the other would be more or less out of its element, and not so efficient as the other. This would tend to increase the friction between the two services, and to prevent them from working together in harmony.

Thus it appears that the local army system would produce an awkward joint in the fitting together of the Imperial forces, and that the defects of this joint would be apparent, whenever the troops of the two services were acting together.

Lastly, the Indian Army, being under the direct control and administration of the Indian Government, the force under the control and authority of the central military authorities would be reduced by more than one-third. The Indian Army would simply be in the position of troops of a friendly Power who might be lent to the English authorities to assist in any campaign, but whose employment would always be limited by certain conditions and restrictions. It is true that under the present system the War Office cannot dispose of the European troops of the Indian Army without special permission; but these troops represent a reserve, which is always available in case of serious need, and is composed of units organized precisely in the same way as those of the Home Army, and in all respects interchangeable with them. This defect of the local army system would be just as apparent in a small campaign as in the most serious case. Suppose, for example, that one or two units from the Indian Army were required to take part in some small war. The real base of these units would be India, and although no doubt it would be possible to mix them in the same combined tactical formation with the other units, and to let them depend entirely upon the same sources of supply as these, yet the result would be a good deal of friction. In fact, the difference in this matter between the present system and the local army system is this, that in the former case the units of the European Army in India are part of the Home Army, and are lent to the Indian Government till actually required: in the latter case they are part of the Indian Army, but may be lent to the Home Government if needed.

Such are the most prominent advantages and defects of the local army system as compared with that now in force. The proposed organization would remove the most serious evils of the present system; it would, at the same time, give rise to evils no less serious. It appears, moreover, that whereas the advantages of the local army

system are mainly such as bear upon the efficiency of the Home and Indian Armies as separate and distinct forces, its disadvantages affect the fitting together and the co-operative action of these two forces. Those disadvantages which affect the efficiency of the two armies independently might, indeed, be minimized, if not entirely nullified; but the complete severance of the bonds which unite them is a step which nothing could modify, and which would always hinder the full development of the offensive power of the Empire. Bearing in mind the conditions which have been laid down before, concerning the aim of any proposed reform, the local army system stands condemned from this point of view. And in truth, if the arguments advanced here be sound, it is impossible to doubt that, as a question of military policy, it would be a step in exactly the opposite direction to that which reforms should take. To develop the offensive power of the country the bonds which unite the various fractions of the Imperial forces must not be severed but must be drawn closer. Decentralization, it is true, is a most important, and, where circumstances admit, an indispensable principle of modern organization; but its value is dependent on the close knitting together of the various independent parts, and as the term implies, these must all be grouped round one common centre. Decentralization, which consists of separating a whole into independent fragments and abolishing unity of command, if indeed it can be called decentralization, is not only not advantageous but positively hurtful. It is necessary to bear in mind that the case of the European Army in India is exceptional. The men are enlisted at home, and serve in India during peace time. At the same time there is in India a native army, administered entirely by the Indian Government, and which is not as yet generally admitted to be available for Imperial purposes. If it were within the bounds of probability that the entire Indian Army, native as well as European, might in the future be placed directly under the central military authorities, and might become available for all Imperial purposes, the local army question would assume another aspect. In such a case the European Army would form a permanent part of the Indian forces, and the whole Indian Army would become a decentralized fraction of the Imperial offensive strength. But we are not dealing with such a case. There is no apparent probability that the native Indian troops will be placed under the central military authorities and made available for any Imperial purposes. It is necessary, therefore, that the authorities should keep their grasp upon all troops that they have hold of, and not give up the substance which actually exists for the shadow which there is no ground for believing will ever become anything but a shadow.

We are not without an example of the local army system as applied to a foreign dependency. The army of the Dutch Eastern Archipelago is organized on this system; and, although the form of organization is different from that suggested for our Indian Army, the Europeans and natives being mixed in the same corps, yet, nevertheless, it is possible to obtain from a study of this force, some idea of the effect of the system. Now the Dutch Indian Army is in every sense of the word a purely local force. Doubtless it answers very

well the purposes for which it is intended, but it is impossible to suppose that its value would be very great, if it were called upon to co-operate with the Home Army in any campaign out of the Indian possessions. In such a case the two forces would be in every sense strange to each other, and there would be the same difficulty in working together as if the armies were those of allied Powers.

This, it is contended, is the inevitable effect of the local army system without unity of command, and for this reason it is condemned here. Should this principle of unity of command for the whole Imperial forces ever be enforced, the question will then be placed upon an entirely different basis, but, in this case, the unity of command must come first, for without it there is no ground for the discussion of the local system.

It might be contended that the advantages of the local system are so great to both the Indian and Home Armies that they counterbalance the defects which the separation of the two will cause. To this it must be replied that to assume that these advantages are inseparable from the local system, is to take too much for granted; and that even if it could be proved that this were actually the case, it would be a questionable policy to forsake the true direction of reform, in order to introduce a system which, if attended by advantage, is certainly not free from grave defects, and is in principle a step in a wrong direction.

The Conversion of the European Army in part into a Local Force.

The second reform suggested is the conversion of a part of the European Army in India into a local force, the remainder being made up of general service troops temporarily stationed in India and periodically relieved. The system is, in fact, a combination of the purely local army organization with that now in force.

Before commencing to discuss this proposal it is necessary to establish some principle for regulating the division of the Indian garrison into local and general service troops, and for the relative strength of each force. Beyond doubt, some such principle must be discovered as a basis for the organization. The system must contain some peculiar merits of its own, or it must represent the middle course between the Scylla and the Charybdis of the present, and the purely local forms of organization. It will not do to regard it merely as a temporary expedient for testing the working of the local system before finally adopting it for the entire Indian Army.

The Indian Army might be divided into local and general service troops, according to one or other of the following principles:—

(*a.*) The local force might represent the minimum garrison absolutely necessary at all times to be present in the country to preserve order, the general service force being available for expeditions and operations outside of India.

(*b.*) The local force might be organized as a mobile and compact army available for all operations outside of India, the garrison duty

being undertaken by the general service force. In both these cases the local and general service forces would probably bear much the same relationship to each other; for it would be found that half the present European force in India would always be required to remain in India as a garrison. This appears to be the view of the Simla Committee, as it has been proposed to organize the Army in four Army Corps, of which two at the most may be sent out of India in time of war.

The local army of the East India Company's service before the Mutiny was equal to about $\frac{3}{5}$ of the entire European force in India. In 1852[1] it consisted of nine single battalion regiments of infantry, and a large force of artillery,[2] and its total strength was 15,000 or 16,000. The troops of the Royal Army at the same time consisted of 5 regiments of cavalry and 24 battalions of infantry, in all about 24,700 of all ranks. Both services had depôts at home, and the Indian service had its own recruiting establishment,[3] and a Training College for its Officers. The conditions of service, pay, pensions, furlough regulations, &c., were different in the two services, and in organization, drill, and interior economy many differences existed. A good deal of jealousy was generally manifested between the Royal and Indian troops, and minor points, in which the systems of the two services were opposed, were exaggerated, and served as pegs on which to hang *esprit de corps*.

The defects of this form of organization as found by experience were as follows:—

(1.) The competition between the two services in the recruiting market;

(2.) The complication caused by the existence side by side of corps of different services, having different systems of organization and administration, different drill regulations and different rules concerning pay, pensions, &c.;

(3.) The jealousy between the troops of the two services;

(4.) The expense of maintaining a separate depôt and a separate Training College for Officers.

Of these defects, the first would be applicable if the system should be introduced again. Although the East India Company's service would not be revived, the two forces would be practically separate in interests, and it would not be possible to allow the troops at home to enlist men for the Indian local army. If such a measure were attempted, the latter service would undoubtedly get only the worst recruits. To expect Officers to encourage the best men to select a service in which they had no direct interest in preference to that to which they belonged, would be to regard them as superior to human weaknesses. The competition between the two services would also necessarily give rise to an unhealthy exaggeration of the benefits of each service, which would occasion many of the evils from which it

[1] *Vide* "Quarterly Review," 4, 1884, pp. 510, 521.

[2] 17 troops of Horse Artillery and 48 companies of Foot Artillery, *vide* East India Register and Army List.

[3] There were seven recruiting stations at home for the Indian Army.

has recently been the aim of the authorities to free the recruiting service.

The second defect would also be applicable to the partly local system, though in a modified form. The organization and drill of the troops would be the same, but the pay and pension rules would be different, and many other minor differences would undoubtedly arise. In working the organization, it would occasion much difficulty to the authorities to have two classes of soldiers and two terms of enlistment to deal with.

The third defect, the jealousy between the two services, would undoubtedly be revived, and would increase the friction between the two forces when working together. With regard to the fourth, it is clear that it would be necessary to maintain separate depôts, but these need not necessarily cost more than the depôts of the present organization, for the number would not be increased. The separate Officers' Training College would not be necessary.

On the other hand, the modified local system has certain peculiar advantages of its own, which are:—

(1.) The local force would form a nucleus of men highly trained in the peculiar duties of the Indian service, and it would afford an example which the general service corps would soon learn to follow. In other words, the general service corps arriving in India would be quickly initiated into the duties of service in India, by seeing them practised in the local army.

(2.) The general service force would act as a check upon the local force in case of disaffection in the latter.

(3.) The competition between the two forces might tend to promote the efficiency of both.

In addition to the special advantages and defects of the modified local system, it is evident that those also of the purely local system are also applicable to it, though in a modified form. By introducing it, many of the defects of the present system would be not altogether eliminated, but much less felt; on the other hand, the evils of the local system would be there, though to a limited extent. The effect, in fact, would be to combine the advantages and defects of the two systems, and to take away the salient features of both.

This form of organization has found some favour amongst authorities on Army reform. A recent writer[1] proposes that a modified system of local service should be re-established in India, the local force numbering from 25,000 to 30,000 men, enlisted for twelve years, receiving special pay and a pension, and being supplemented by a general service force of about equal strength. The reasons which appear to have led the writer to propose this reform are: (1) the necessity of returning to long service for the troops of the Indian Army; (2) the desirability of not giving up India entirely as a training ground for the Home Army; (3) the defective working of the present system.

In summing up the arguments in favour of and against the modified local system, the first conclusion appears to be that the reform would

[1] "Quarterly Review," 4, 1884.

most probably effect a considerable relief from the evils which press so hard at the present time. Both the Indian and Home Armies would probably be more efficient within the sphere of action of each. Having said this, however, there appears to be no more to be said in favour of the system. It is merely a compromise between two systems of organization, and represents no definite principle, but rather the avoidance of the two principles upon which these systems are based. It is thus a step out of the path of progress in either of two directions, and leads into a *cul de sac* from which there is no exit but by retracing one's steps. For this reason, as well as for those advanced against the purely local system the proposal of a modified local army must be rejected here. If the local system be wrong in principle, it is wrong on however small a scale it may be applied. If, on the other hand, the principle be correct, it must be carried to the farthest possible limit; the whole Indian garrison must be organized as a local force.

The objection will naturally occur to the critic that, in a matter of such intricacy as the organization of the Home and Indian Forces, bare principles without modification can be of little service. This is, doubtless, true; nevertheless, it seems clear that in this matter we shall not make the most of the offensive power of the Empire, unless we throw our lot in boldly with one principle or the other. By avoiding both issues we may secure certain advantages; we may succeed in organizing a small, compact, and highly efficient offensive force, or a garrison army, specially qualified to secure the country from internal disturbances. This force, however, would be more or less a *corps d'élite;* its extra efficiency would only be secured at the cost of that of the remainder of the Indian Army, and the latter would sink into a position of inferiority. This result is quite contrary to the spirit of modern organization, the object of which is to bring the greatest possible number of men into action, and with this aim to maintain the same average standard of efficiency throughout the entire Army. It is, of course, desirable to promote the efficiency of each separate branch and division of an army, and to raise it to the highest standard possible; but this must not be done by lowering that of any other branch or division. An army will be best fitted for the purposes of war when the average efficiency of each component part is the same.

Again, the modified local system is open to the objection that it causes another joint in the organization of the whole Army. At present we have but one Army at home and abroad, though between the Home and Foreign Armies there is necessarily something of a joint. Under the purely local system there would be two forces entirely separate from each other, but connected as branches of the Imperial forces. In this case the joint would be in the natural place. In the modified local system, however, we should have a Home Army, a force serving abroad, and a local Indian Army, and the effect of the extra joint which this organization would occasion would be to weaken the whole force for united action. It is true that the occasions for the united action of the three branches of the Imperial forces would probably be very rare, but throughout the discussion of this question

the principle has been rigidly adhered to, that the whole of the available forces of every description must be so organized as in case of national emergency to be capable of working together with the least possible friction.

In the foregoing pages an endeavour has been made to show that the adoption of the local system in either of the forms suggested would be a false step in the path of reform, and a hindrance to the progressive development of the offensive power of the nation. The two principles of organization which are mainly concerned in the question are those of decentralization and the close union of the fractions of the Army. The latter principle is the basis of the present system; it is a mistake, however, to assume that the former would be carried out in the local system. The local system does not imply decentralization, but dismemberment. At best it would make India strong at the expense of the Empire, and it would not even make India strong against attack from without, for it has been pointed out that the defence of India can only be assured by developing the offensive power of the Empire. The very name of "local army"—and there is a great deal in a name—is an indication of the result which the system would produce.

Nevertheless, the advantages to organization of the local system are so great, that it is impossible to resign them in a moment. Is it certain that these advantages are inseparable from the defects of this system? Would it not be possible to conceive a form of organization which would secure the one without accepting the other?

In seeking for a reply to this question, it must be asked first what we wish to secure, and what we seek to avoid. What we wish to secure, assuming that the requirements of India and the Empire have been correctly defined, is an organization which will remove the defects caused by the relief of corps in India, and the system of enlisting men upon the same terms for the Home and Indian Services; what we seek to avoid is the disintegration and dismemberment of the Imperial forces which would result from the adoption of the local system. Now it is clear that the advantages which it is desired to secure cannot be obtained without separating in some way or other the Home from the Indian Army; it is no less clear that the dangers which it is sought to escape from can only be averted by retaining the European Army in India as an integral part of the Home Army, and by organizing it so as to be available for operations in any part of the world. To contribute to the offensive power of the Empire every branch of the Imperial forces must be, in the fullest sense of the word, an offensive force. Now, a force which, either by reason of its organization, or its training, or from any other cause, is debarred from acting out of a certain country or district, or is unable to do so with full effect, is not, properly speaking, an offensive force at all.

In the organization suggested below, therefore, the fundamental idea is to separate the European Army in India from the Home Army, and at the same time to keep the two forces closely bound together. The proposals made with this object contain nothing either very startling or very original. They are but the logical, and, as far as can

be seen, the inevitable consequence of the military policy at present being pursued, and they can be carried out with the smallest possible dislocation of the present organization. In describing them the word "foreign" will be used in place of "Indian," for to make the system really effective it must be applied to the entire European force serving abroad.

Proposed Organization.

The basis of the organization proposed here is that there should be for the private soldier two distinct forms of engagement—one for home and one for foreign service. Every man enlisted should select either one or the other. The units should remain organized as at present, except that in the cavalry some form of the brigade system proposed a year or two ago would be necessary. Every administrative unit would then consist of two or more parts, one or more of which would, under ordinary circumstances, always be at home in time of peace, and one or more would be abroad. Units abroad would never be relieved, as far as the private soldiers are concerned, but the cadres, the Officers, and non-commissioned officers would be periodically relieved by the cadres at home, a certain proportion being moved every trooping season. Taking the case of the infantry first, let us see how the system would be worked.

A double battalion regiment, as at present, would consist of a battalion at home and a battalion abroad. The battalion at home would be composed of men who had enlisted for home service, that abroad of men who had enlisted for foreign service. The latter would be despatched to join their battalion as soon as they were physically fit for foreign service, and, having joined it, they would remain with it till their term of colour service expired. The Officers and non-commissioned officers would serve with both battalions, and would be moved from one to the other periodically, serving for a certain time with each unit.

In the artillery, this system could be applied just as easily as in the infantry, a permanent connection being made between the batteries at home and those abroad. A certain number of batteries would be formed into an administrative unit, either brigade or regiment, and the cadres of Officers and non-commissioned officers would serve alternately with the home and foreign batteries.

In the cavalry, to carry out this system, it would be necessary to brigade two or three regiments together, and to make the Officers and non-commissioned officers serve in rotation in each.

It is not necessary for the working of this scheme that the proportion of troops abroad and at home should be the same. When the proportion is the same, as is the case more or less in the infantry, the terms of foreign and home service would be the same; when a larger proportion of units is at home, as in the cavalry, the period of home service would be longer than the period of foreign service; and when the larger proportion of units is abroad, the period of foreign service would be the longer.

With regard to the normal period of service with each unit, it is not possible here to lay down any precise rules. It appears that the authorities regard eight years as a fair term, as it has been laid down[1] that, after serving that time either abroad or at home, Officers and non-commissioned officers are eligible to pass to the home or foreign unit. This would give in the infantry 8 years' home to 8 years' foreign service; in the cavalry 8 years' home to about 5 years' foreign service; in the garrison artillery 8 years' foreign to about 7 years' home service; and in the horse and field artillery 8 years' home service to about 8 years' foreign service. It seems open to consideration whether the tour of service—at any rate as far as the Officers are concerned—might not be made somewhat shorter than eight years, having regard to the importance of promoting their education, and of maintaining their physical efficiency and energy. A long tour of service in an out of the way garrison in India is a damper upon the zeal of many Officers. This, however, is a question upon which it would not be possible to speak decidedly without fully discussing the pros and cons.

The period of service of the cadre abroad and at home would be affected by promotion of Officers and non-commissioned officers. For example, a subaltern, after serving four years at home, is promoted and falls to a vacancy in India. He would therefore have to go out before he had completed his tour of service at home. Such cases would be of frequent occurrence, especially if the tour of service with each unit were eight years, for at the present rate of promotion few Officers would remain eight years in any rank. This difficulty, however, might be minimized by making all Officers and non-commissioned officers on promotion join the foreign or home unit, so that one definite principle might apply to every case. The depôts would always be available to give relief to those who might be unfortunate in getting an unusually large share of foreign service.

Exchanges would naturally be permitted, as far as the interests of the Service allowed, so that both Officers and non-commissioned officers might suit their own tastes and circumstances in selecting home or foreign service in preference.

It would be necessary to make some conditions for the relief of the cadres, and to limit the number moved each season, so that the efficiency of the various units might not suffer by having too many fresh Officers at one time, and by having a large proportion absent during the course of relief. For this reason it would, perhaps, be desirable to limit the number of Officers moved annually to one or at most two per squadron, battery, or double company, and a similar proportion might obtain with the non-commissioned officers.

It may be held that to sentence certain regiments, battalions, or batteries to serve perpetually in India or in England would be a blow to *esprit de corps*, and contrary to their traditions. If this objection be really valid it might be met by moving periodically the regimental property, colours, &c., &c., of the different units from India to England, and *vice versâ*, and by changing the titles of the two units.

[1] G.O. 9, 1883.

Thus if the 1st battalion of a regiment were at home, after a certain number of years of service in India, the regimental property of the 2nd battalion would come home, whilst that of the 1st battalion would go out, and the home unit would now become the 2nd battalion and the foreign unit the 1st.

Again, to move an Officer from one unit to another may be regarded as an objectionable course on account of the interruption to the system of training and the changes in system caused by changing Officers. But it must be remembered that, if an Officer's tour of service commenced with his appointment or promotion, he would practically spend the whole, or almost the whole, of his service in each rank with one unit. Officers of the rank of Lieutenant-Colonel in command would spend the whole of their service in command with the same unit. Moreover, when the service of the rank and file with the colours is short, every Officer would see all those who joined with him complete their colour service before he was relieved. In practice, however, the transfer of Officers between the home and foreign units would be very little, if at all, more frequent than it is likely to be in the future under the present system with Officers subject to linking rules.

Engagement.—With regard to the terms of engagement for the men enlisted for India, it is only necessary to say that it should be determined by the maximum time during which the soldier retains his physical efficiency in India. From the opinion quoted before, eight years appears to be at present the average time during which the constitution is able to stand the effects of the climate. By retaining men at home till they are fully matured, and by paying increased attention to sanitary laws, this average might be increased to ten or twelve years. At any rate, the object must be to make the term of engagement as long as possible within certain limits. Men affected by the climate might be sent home after eight years' service, and those who retained their physical efficiency unimpaired might be allowed to extend. The engagement should be for so many years in India, and the man should be sent out as soon as he is physically fit. It would be necessary, moreover, to give the men a pension at the termination of their engagement, or to provide them with some description of civil employment, for men who had spent the best years of their life in the service of the country in a tropical climate would be in no position to compete in the labour market with men who had never left the country. The prospect of a pension would probably be a greater inducement to enlist than that of deferred pay, although this is a question which admits of much argument on both sides. The pension, however, has the advantage that it gives the country a hold over men who are still in their prime, and who would prove very useful on mobilization. State employment, if it could be introduced on a large scale, would present all the advantages of the pension system without its defects. The argument that to pension men is to pauperize them is undoubtedly not without some foundation, and a still more serious argument is that a comparatively small pension continued for life, or for a number of years, is an enormously

costly expedient. The question of State employment, however, is a very large one, and cannot be entered into here; yet it is impossible to picture what might be done for retired non-commissioned officers and men, if the State were in possession of any railways or large undertakings, without a feeling of regret that the discussion of this subject has not led to any practical result as yet.

Let it be supposed, by way of example, that the term of Indian service was fixed at ten years. A recruit would then spend a period of from two or three months to two years with the depôt, and would then proceed to India for a term of ten years, when he would be discharged with a moderate pension, or placed in some Government employment. He might remain in the 1st Reserve, destined to reinforce the Indian Army, for three or four years, and then pass into the 2nd Reserve till he had completed twenty-one years' service. The 2nd Reserve might be used on mobilization to supply the Home Army with men for the administrative services, the train, the ammunition columns, &c. The men of the Indian Army, if physically fit, might be allowed to extend their service to twelve or fourteen years, and men of under ten years' service, if affected by the climate, might be passed into the reserve before their term was completed.

It is by no means intended here to suggest that the colour service should be fixed at ten years. This figure is given merely by way of example. The principle should be to make the term as long as possible, but not over twelve years or so. What the limit should be can only be decided by medical authorities, and it is a question for discussion whether it should be a rigid limit, or should vary with the physical qualifications of each man.

Non-commissioned Officers.—The Indian Army would be a good nursery for non-commissioned officers, both for the Indian and Home services. To encourage men to qualify as such, they might be permitted to join the Home Army after having served in India a few years, engaging, of course, to extend their service with the colours. This, however, is a question which might create some difference of opinion between the War Office and the India Office, and which exemplifies the disadvantages of the dual control of the two services.

With regard to the strength of the units, the establishments proposed by the Simla Commission should be regarded as the minimum for all corps stationed in India, viz., for battalions of infantry 1,044 rank and file, and for squadrons of cavalry 145, or preferably 150, rank and file, with at least the same number of horses. It is suggested here that there should be only two establishments, one for home service and one for foreign service, and this for the reason given before that units abroad are not within reach of their furloughed men, and should, therefore, always be on a war footing.

The Home Army.—Being freed from the duty of serving abroad in peace time, the rank and file of the Home Army might be enlisted for a shorter term of service than at present. Provided they were not enlisted too young, the term might be reduced from three to five years with the colours, five years in the 1st, and two to four years in the 2nd Reserve.

To obviate the necessity of maintaining the sliding scale of establishments, it is proposed that all minor campaigns be carried out by the foreign service army. A force of about the strength of a Division might be taken as normal of what is likely to be required for Colonial expeditions. This force could be got together partly by borrowing from India, the Colonies, and the Mediterranean garrisons, and partly from a small reserve stationed at home. The reserve would consist of a few units of the Home Army, maintained on the foreign service establishment, and composed of men enlisted for the foreign service long engagement. Supposing this reserve to consist of 3 or 4 battalions of infantry, 1 regiment of cavalry, and 3 batteries of artillery, with the administrative services for a complete Division, the Division could be completed by borrowing 1 battalion from India, 1 or 2 from the Mediterranean, and 1 from the Colonies. If necessary, those in the Mediterranean could be temporarily relieved by battalions from home on a peace footing. The Division thus formed could be supplemented by marines, naval brigade, native levies, and any troops which happened to be on the spot. If the occasion should require a greater development of force than could be obtained from these sources, then a portion or the whole of the Home Army could be mobilized. In case a part of the Home Army only was needed, it would be desirable to mobilize the different units in rotation, so that the reserves once called out for a minor campaign would not be likely to be required again, except upon a general mobilization. This pre-supposes that each unit has its own reserves, a development of organization which it is highly necessary to aim at, and which would be rendered easy by equalizing the establishments of all units.

The Army in normal times is composed of—

Cavalry.—28 regiments of the line, of which 9 are in India, 1 in the Colonies, and 18 at home.

Infantry.—2 four-battalion regiments, of which 2 battalions each are at home, and 2 abroad;
66 two-battalion regiments, of which 1 battalion each is at home, and 1 abroad;
1 single-battalion regiment at home.

Artillery.—24 batteries of Horse Artillery, of which 10 are in India, and 14 at home;
76 batteries of Field Artillery, of which 40 are in India, 1 in the Colonies, and 35 at home;
96 garrison batteries, of which 40 are at home, 29 in the Colonies, and 27 in India.

This is the ordinary peace distribution of the Army, and includes only the combatant troops of the regular Army, except the Guards. The troops at present in Egypt are counted as belonging to the home establishment.

According to the organization proposed here, these units would be distributed as arranged in the following table. This table, it must be noted, is purely suggestive, and, except with regard to the principle

of dividing the administrative units into home service and foreign service tactical units, may be altered in any way.

The average strength of the infantry battalions on the home establishment would be about 600 rank and file, or about 680 of all ranks; of the cavalry regiments, 440 rank and file, or about 525 of all ranks; of the field and horse batteries, about 135 rank and file, or 151 of all ranks. These numbers are obtained by taking the average of all the units on the home establishments; but from this average the reserve units of the foreign army have first been deducted, these units being calculated at the same strength as those of the foreign service army serving abroad.

	Home service soldiers.	Foreign service soldiers.		
	At home.	At home. Reserve.	Abroad.	
Infantry.				
1 4-battalion regiment	1	1	2	
1 „ „	1	1	2	
1 double battalion regt.....	..	1	1	
1 single „ „	..	1	..	
65 double „ „	65	..	65	
Total.....	67	4	70	71 battalions at home, 70 abroad.
Cavalry.				
4 regts. heavy Dragoons	4	..	..	
1 brigade of Dragoons	2	..	1	
1 „ „	2	..	1	
1 „ Hussars	2	..	1	
1 „ „	2	..	1	
1 „ „	2	..	1	
1 „ „	1	1	1	
1 „ Lancers[1]	2	..	1	
1 „ „	2	..	1	
Total.....	19	1	8[2]	20 regiments at home, 8 abroad.
Artillery.				
Horse Artillery batteries....	14	..	10	
Field „ „	32	3	41	
Total.....	46	3	51	49 batteries at home, 51 abroad.
Garrison batteries.....	40	..	56	40 batteries at home, 56 abroad.

[1] 1 regiment of Hussars to be converted into a regiment of Lancers.
[2] 7 regiments of 4 squadrons each in India in place of 9 of 3 squadrons each.

The strength of the Foreign Service Army would be as follows:—

Infantry	74 battalions.....	of	1,044	rank and file....	77,256	
	66 depôts	„	200	„	13,200	
	2 „	„	600	„	1,200	
						91,656
Cavalry	9 regiments	„	580	„	5,220	
	8 depôts	„	90	„	720	
						5,940
Artillery	54 batteries	„	150	„	8,100	
	2 depôts	„	178	„	356	
	4 „	„	337	„	1,348	
	56 garrison batteries	„	140	„	7,840	
	11 „ depôts	„	124	„	1,364	
						19,008
Engineers[1]						1,080
Administrative Services[1]						648
				Total.....		118,332

Of the Home Army—

Infantry	67 battalions	of	600	rank and file....	40,200
Cavalry	19 regiments	„	440	„	8,360
Field Artillery / *Horse* „	46 batteries	„	135	„	6,210
Garrison Artillery.....	40 „	„		„	
Engineers[1]					2,888
Administrative Corps[1]					3,667
Guards Infantry.....	7 battalions	of	744[1]	rank and file...	5,108
Guards Household Cavalry	3 regiments	„	343	„ ...	1,029
				Total.....	67,462

Depôts.

As the home units would consist of men serving under conditions differing from those of the units abroad, the former would no longer be able to act as feeders to the latter. These would then become dependent upon depôts at home in the same way as the old East India Company's forces, as well as the units of the Royal Army depended upon their depôt troops in England. It is proposed that the depôts at present existing should belong exclusively to the units abroad. Units at home have no need of a depôt, except as a temporary receiving station for recruits locally enlisted. The depôts might still be used for this purpose, but, except for this purpose, they should have no connection whatever with the units at home. When the latter are called upon to go abroad, they would form a depôt at once of reserves, men unfit for service, reserve Officers, and militia. The Officers of the depôt would, moreover, be available to undertake the depôt duties, and the whole depôt would be divided into two parts, one for the home service, and the other for the foreign service unit.

It must be made clear at once that this proposal implies a considerable increase of the establishments of the depôts. This is a

[1] As at present.

necessary consequence of relieving the home units of their duty as feeders of the foreign units. The average strength of a double battalion depôt in the infantry is about 66 rank and file. It is unnecessary to say that this establishment is quite insufficient to feed a battalion of over 1,000 rank and file. It is not quite so easy to say what the strength of the depôt should be. The average annual draft, supposing the term of service in India to be ten years, would probably be at least 150 rank and file. Some men would serve with the depôt as much as two years, or perhaps even more, before being sent to India, others not more than three or four months. The average term of depôt service may be taken at from nine to twelve months. Allowing, therefore, for old soldiers, staff, &c., the depôts should number about 200 rank and file for each double-battalion regiment. Perhaps, instead of fixing one establishment for all, it would be better to allow their strength each year to correspond with the present and prospective requirements of the battalion abroad.

The depôt batteries of horse artillery have a strength of 176 rank and file, and 1 battery feeds 5 service batteries. In the field artillery the depôt batteries have 337 rank and file, and each depôt feeds on an average 10 service batteries. In the garrison artillery a depôt battery with 124 rank and file feeds 5 service batteries. In all these three instances the proportion of depôt to service troops is about the same as that proposed for the infantry, viz., 1 to 5, so that no increase would appear to be necessary in the artillery depôts.

In the cavalry the establishment of the depôts is 90 rank and file to feed a regiment of 408 rank and file, or 1 in 4·5. There would, therefore, be no necessity for increasing the strength of these depôts, even if the number of regiments abroad be reduced to 8 with 4 squadrons each.

To carry out these proposals it appears that in the infantry only an increase in the establishments of the depôts would be necessary, but the increase must be considerable. For the present year the total of the rank and file of the infantry depôts is 5,890, but this is somewhat above the normal establishment on account of the troops in Egypt. The ordinary strength is about 5,220. According to the organization proposed, we should require 66 depôts at 200 rank and file, and 2 at 400, or 14,000 in all. The single battalion being on the home establishment would require no depôt. This implies an increase of 8,780 rank and file. It would not be safe to compensate for this increase by reducing the establishments of the home battalions, for a strength of 600 rank and file is not greater than is absolutely necessary when a considerable proportion of the men are not fit for active service.

The depôts must be kept rigidly distinct from the units of the Home Army. This is a point on which it is necessary to be very particular. If the men from the depôt were allowed to pass into the home unit, and men from the latter to be sent abroad, the disadvantages which are at present apparent would speedily make themselves felt again. The men of the home unit would be very immature, and the unit itself would be nothing but a depôt. Transfers, however, between

the two services might be allowed if kept within proper limits, and might even prove a useful counterpoise to minimize the disadvantages which might arise from the one service proving more popular than the other. Thus, supposing the home service to be the more popular, and the home units to be filled and their reserves complete, a number of men, after completing their colour service at home, might be permitted to re-engage for service abroad. Or supposing the foreign service to be better liked, men from the depôts might be allowed to join the home unit, provided the foreign unit was up to its strength. Again, the men of the two services might be permitted to exchange, provided no injury was done to either service.

Effect of the Proposed Organization.

The principal results which would follow from adopting the proposals made here are as follows:—

(1.) The evils caused by the relief of corps would disappear.

(2.) The length of service of the rank and file would be regulated according to the regiments of India.

(3.) The connexion between the home and foreign units would be closer and more real than it ever can be under the present system.

(4.) The evils of the sliding scale of establishments of the units of the Home Army would be removed.

(5.) The units of the Home Army would create reserves, not as at present at a varying rate, but regularly, and each unit would thus be able to create its own reserves, and on mobilization could receive its own men back again.

(6.) A nucleus of foreign service units on a war footing, composed of men of mature age, would always be ready for minor campaigns.

(7.) The service of Officers and non-commissioned officers at home and abroad would be more equally divided than at present.

These advantages would be secured not only without disconnecting the Home Army from the Indian Army, but with the result of uniting the two more closely.

With regard to the first advantage claimed, it should be noted that the question of the relief of corps has been entirely changed by the alteration in the length of engagement of the soldier. Formerly the relief of troops in India was necessary, because the soldier did not retain his physical efficiency for anything like the entire time of his service; to-day it is no longer necessary, because the soldier serves a comparatively short time, and is at his best when discharged. The objection that regiments permanently located in India are liable to become a political danger, and to combine for illegal purposes, can hardly be applied to the proposed organization, for the cadre would serve but a short term in India, and the rank and file would spend a shorter time there than under the old long service system, when regiments were twelve or fourteen years in the country.

The closer union of the units at home and abroad is an advantage

of some importance. At present the connection between the battalions of the double-battalion infantry regiment is slight, and grows but slowly. If it is to be maintained, any means of making it real is to be welcomed. The regular transfer of Officers between the home and foreign units would speedily have this effect, and would soon generate a feeling of unity throughout the whole corps. The regiments in name would then become regiments in fact.

The brigading of the cavalry regiments is a further step in the direction of connecting the units abroad with those at home, and it would, no doubt, meet with some opposition at first, as indeed the proposal did meet with opposition, when discussed a year or two ago by the Committee appointed to examine the question. The requirements of organization, however, are imperative, and it is not easy to see how the desired connection can be established except in the way proposed.

In addition to the positive advantages which would be secured by adopting a form of organization such as that proposed, none of the defects of the local system are bound up with it. The Home Army would still possess a training ground in India, and the troops in India would have the advantage of being trained by Officers and non-commissioned officers well acquainted with the system of training in England, and who would not be likely to suffer in activity from long residence in a tropical climate.

In applying the system to all the foreign garrisons some modifications would be necessary. It would not be advisable, for reasons connected with their training, to maintain the same battalions of infantry permanently in fortresses like Gibraltar, Malta, Aden, &c. The troops in the two former garrisons might be occasionally relieved by the reserve battalions of the Foreign Service Army at home, and those at Aden by battalions from India. Such modifications, however, would be easy to carry out, and they would not affect the general principle which, it is maintained here, is essential to the organization of the Imperial forces on a sound basis, viz., the separation of the Home Army from the Foreign Service Army without loosening in any way the ties which unite the forces.

To pass from the present to the proposed organization no dislocation of the present system would be needed. The transition would be natural and easy, but it would necessarily be gradual, for it would take some time to fill the Foreign Service Army with men enlisted on the new conditions. But no extra movements of troops would be necessary, and the system of relieving corps in India would gradually die a natural death.

A defect of the proposed organization, which will, perhaps, be the first to strike many, is that it reduces the reserve-forming power of the Army. This defect is, however, more apparent than real. The Foreign Service Army no doubt will not pass many men into the first reserve, but on the other hand the Home Service Army will be able to fill the reserve more rapidly than at present. Moreover, the troops abroad at present do comparatively little towards forming reserves, for men are invited to spend their whole colour service in

the ranks. Again, the reserve at home has suffered much from the calls which it has been necessary to make upon the men. The principle which has been followed here is that each unit should create its own reserves, and there should be no difficulty in fixing the term of engagement so as to make this possible. The Foreign Service Army would create in addition to this a second reserve, available for filling up the non-combatant services. The units at home would be mobilized in rotation, when required for minor wars, so that the reserve once called out, would escape further service except in case of a general mobilization.

The Relative Cost.

The effect of carrying out the system proposed here upon the cost of the Army, as compared with the present expenditure, would be as follows:—

(1.) The expenditure on transport between England and India would be greatly reduced both on account of the abolition of the system of moving complete units about, and also because the length of service of the rank and file of the foreign army would be increased.

(2.) The expenditure on pensions would be increased, and would doubtless be in excess of the combined cost of pensions and deferred pay under the present system. The proposal to pension the rank and file is, however, not an essential part of the organization suggested here. All that is maintained is that some provision be made for men discharged from the colours, so that they may be available, if required, so long as they are fit for service. Government employment is preferable to a pension for many reasons; and if means could be devised for procuring work for all discharged soldiers, the State would be saved from a serious burden.

(3.) The increase to the establishments of the infantry depôts would occasion a considerably increased expenditure. This item would probably be the most serious objection to the proposed organization. It must be remembered, however, that the increase to the strength of the depôt is not peculiar to the system proposed, but is a necessary condition of any form of the local army system. Moreover it adds very greatly to the value of the corps on the home establishment, and converts them from depôts into really effective units. This result can be obtained in no other way but by an augmentation of the establishment, and such an augmentation is a vital necessity.

If two cavalry regiments were brought from the Indian to the home establishment another item of expenditure would be incurred by the latter, whilst the former would be relieved of the expense of two regimental staffs, but would have an extra squadron to pay for, as the Indian establishment would then consist of seven regiments of four squadrons each, instead of nine regiments of three squadrons each. This, however, is a matter to be adjusted by the India and War Offices, and in case the Indian Government should make good their claim to dispense with two regiments, the home authorities

could hardly reduce the two regiments, considering the numerical weakness of the cavalry force at home, and the impossibility of re-creating in a short time new cadres of that arm. On the other hand the cost of two depôts would be saved to the Indian Government.

The net result would doubtless be an increase in expenditure, the amount of which it would be impossible to estimate with absolute accuracy. The extra cost, however, is entirely devoted to increasing the number of men under arms, whilst the saving is in points which have no bearing upon the efficiency of the system.

The increase to the establishments of corps in India is not included here as an item of increased expenditure peculiar to the organization proposed. This increase was recommended by the Simla Commission, but the extra expense was to be saved by reducing the number of units. This question has not been entered into here, and the number of units in India is a matter entirely apart from the question of their organization. In elucidating the proposed organization, it has been supposed by way of argument that the number of cavalry regiments in India is reduced to seven of four squadrons each, and the number of battalions and batteries remains the same. The only difference in the expenditure occasioned by the proposed organization, therefore, is, on the one side, a saving in transport, and, on the other, a probable increase of expenditure on account of pensions, and an undoubted increase on account of depôt troops. As compared with the local system, however, there is a saving on account of the extra expenditure which the latter system would occasion for pensions calculated at Indian rates; for it would be necessary to give higher pensions to Officers and non-commissioned officers who had served exclusively in India.

The Recruiting System.

In suggesting any change of organization, or of the terms of enlistment, the first and most important question to be considered is: How will it affect the recruiting system, or how will the recruiting system affect it? Any scheme of organization proposed without first having answered this question satisfactorily is certain to be wrecked very speedily, if ever put into practice.

At the commencement of this paper the recruiting system was referred to as one of the main causes which prevented us from keeping up with Continental nations in the matter of organization. It is necessary to recur to this subject here even at the risk of repeating much that has been said before, and of saying nothing but what is well known and acknowledged.

The two first postulates of every sound organization are: (1) that a definite number of recruits, sufficient for the requirements of the Service, be always forthcoming when wanted; and (2) that the recruits, when taken into the Service, be physically fit for the work of campaigning. Where these postulates are not fulfilled in a system of organization, the foundations rest on sand, and in time of rough weather the edifice cannot stand.

It is almost needless to say that these conditions are not, and never have been, at any rate for many years past, complied with in the organization of the forces of the country. Neither can we depend upon the supply of recruits as to numbers, nor are those who enlist physically fit for active service when they join. This is the real key to almost all the defects of organization which retard the development of our military power. In other lands the recruiting system is subservient to the requirements of organization. In England the reverse is the case; the organization is altogether subservient to the requirements of the recruiting system. The recruiting question is, in fact, the spectre which dogs every reform that is introduced, and eats the life out of it, or so mutilates it that the substance is eventually left without the life and the spirit. That this is no exaggeration or empty statement can be shown by examining the course of every reform which has been introduced, and inquiring how far it has fulfilled the expectations originally made of it; then trace the causes which have combined to wreck any project or to stunt its growth to their source, and it will be seen that the recruiting question is in almost every case to blame. This same spectre takes a special delight in riding rough-shod over principles of organization. For example, a certain number of men fit for active service are required in a certain locality with the least possible delay. They are not to be had by legitimate means; the ordinary sources of supply are dried up. How is the necessity to be met? There is but one course open. The case is urgent; the men must be collected by fair means or otherwise. Critics may abuse, and regimental Officers may be heartbroken, but necessity is a hard master to whom no principles are sacred. The only men available are sent; the regimental system is upset, and the Army is kept alive by feeding upon itself.

This is what happens, not in isolated cases, but regularly, and it is a direct consequence of the non-fulfilment of the two first postulates of organization. The two great defects thus are: (1) that a regular and sufficient supply of recruits is not at all times available, and (2) that the men obtained are not fit for active service for some considerable time after joining.

The securing of a regular and sufficient supply of recruits is a matter of considerable difficulty in a voluntary system of enlistment. The Parliamentary authorities naturally offer what is regarded as the minimum of inducements for obtaining the number of men required annually. If 25,000 men can be obtained for an expenditure of n pounds, it is naturally a waste of public money to offer more than n pounds for this number of men. This, at least, is apparently the way in which the question is regarded. But unfortunately the sum of n pounds is calculated to attract no more than 25,000 men, and only this number under normal circumstances, or rather under normal circumstances tending somewhat towards depression. Then comes a year when not 25,000 but 35,000 men are required, and, perhaps, at the same time the times change, trade is prosperous, and the price of labour goes up. Almost all good men are then employed, and few enlist but the idle and the thriftless. The result is that not only is

the extra number of recruits not obtained, but the average number can only be secured by resorting to every possible expedient, and in consequence the whole military system feels the effect.

The second defect is even more serious than the first, because more insidious, and because it does not appear on paper. If the Returns of the effective strength of the Army show that there are 85,000 rank and file on the home establishment, the presumption is that this number, minus a small percentage of casualties, is actually effective. And yet this is very far from being the real state of the case. A very considerable percentage of the men consists of lads too young to undergo the fatigues and privations of a campaign, and who never would be sent on service in face of the experiences of the Crimean war. The worst part of the matter is that there is no way of removing the defect; it is one peculiarly bound up with the system of voluntary enlistment. The enlistment of boys of seventeen or eighteen years old is precisely a parallel case to the purchase of three-year-old horses. It is found that the best horses if not purchased as three-year-olds are not in the market as four-year-olds, or, if in the market, are quite out of reach of the Army purchasers. Exactly in the same way the best recruits, if not enlisted young, by the time they have arrived at maturity have been working at some trade or industry for long, and are lost to the country as recruits. The men who have no trade at the age of twenty, or who have had a trade and have left it, are the least valuable recruits. To limit the supply of recruits to this class would be not only undesirable on account of the quality, but also practically impossible on account of the quantity.

It is true, without doubt, that no man, however satisfactory his physical condition may be, can be sent into the field as soon as he is enlisted. He must first be instructed, drilled, and disciplined. It may be supposed, therefore, that for this reason there is no great harm done in enlisting immature men. But this supposition is fallacious, for the minimum time necessary to drill and discipline recruits under pressure is not more than a few months, and after this time they might be sent into the field, provided that they formed a small percentage of the older soldiers. The time necessary for instilling into the recruit the amount of drill and discipline sufficient to enable him to take his place in the ranks corresponds, therefore, much more nearly with the time needed to put him through the physical training which is indispensable to every young soldier, however mature he may be when enlisted.

These are the two great evils which affect the recruiting system, and through it render insecure the foundation upon which the organization of the Army rests. As long as they remain in force no scheme of organization, however complete, and however suited to the requirements of the country, will make the condition of the Army satisfactory. Reform, to be genuine, must commence, not at the top nor at the middle, but at the bottom. It is futile to expect to cure by changes of organization an evil which lies deeper than the whole question of organization. The primary object of all reform, therefore, must be to satisfy the two conditions which have been described as the two first

postulates of sound organization, namely, to take measures to ensure that the supply of recruits is equal to the demand, and is forthcoming in all emergencies, and to accept as recruits only those who are physically fit for active service. There are three ways in which it is possible to arrive at this result, and in one of these three ways only can we take the first step towards permanently removing the defects which are so constantly coming to a head.

The first plan is to increase the inducements held out to men to attract them into the Service. The object must be, not to attract the precise number of men required, but to have the choice of a much greater number, so that when sudden emergencies arise, or when the price of labour advances, there may be no falling off in the supply, and the men wanted may be obtained whenever they may be called for. For this reason the inducements offered to the soldier should be not less than, but in advance of, the average market value of unskilled labour. The recruiting sergeant should be able to offer better terms than other employers of labour, and he should always have more men anxious to enlist and possessing the necessary qualifications than there are vacancies to be filled, so that in case of emergency an increased supply can be counted on.

To propose any plan for obtaining recruits at the age when they are physically fit for active service is a very difficult matter. As pointed out before, the best men enlist young or not at all, and it is not possible to expect good men to wait in idleness till they are twenty years old, or to leave a calling in which they have made some way. Sufficient inducements, however, would overcome even this difficulty, but the price to be paid would necessitate a serious increase of expenditure. Boys might be enlisted and maintained as supernumerary to the establishment till they were qualified to go on active service, or if the supply of recruits was greatly in excess of the demand, candidates might be kept on a list and accepted as they became qualified.

These proposals imply the addition of fresh burdens to those already borne by the public, but this is an inseparable consequence of the voluntary form of enlistment and of the progressive advance in the price of labour. Something no doubt may be done to render the Service more popular, and to put the advantages of the Army in a more attractive form before the recruiting public; but, after all, such measures will affect the real issue to a very limited extent. It is not easier to induce the recruit to give his shilling's worth of labour for the sixpence wrapped up in a gaudy cover than it is for the performer of what is known as the purse trick to persuade the credulous public to buy a few bright farthings in a pretentious bag for half a crown. Money alone, in the shape of pay, deferred pay, pension, or in kind, will command the value of money in labour. This has been pointed out over and over again by H.R.H. the Commander-in-Chief.[1] There can be no doubt that by spending more money, physically efficient men can be procured in any number that may be required, but this implies a very considerable increase in the Estimates, and is a

[1] It is not necessary to quote any particular utterance. This view has been urged on the public in almost every speech made by His Royal Highness on this subject.

serious matter for the taxpayer. It is calculated at present that our Army costs 120*l.* per man per annum, and this is nearly three times as much as the next most expensive army in Europe, that of France, which costs 46*l.* per man per annum.[1] If the pay of the English soldier is to be largely increased, this proportion will become still more startling. The country, however, must not in fairness resent the increase. It is the privilege of the Continental citizen to serve his country in person; it is the privilege of the Englishman to provide a costly substitute, and he must not be insensible to his advantages nor fail in his duty.

The second plan for overcoming the difficulties of the recruiting question is to take the present supply of recruits as a basis, and so to reduce the demand that the two necessary conditions may be satisfied. This means making a very considerable reduction in the number of men annually enlisted, or, in other words, reducing the Army. By this means, no doubt, it would be possible to depend upon a regular supply of sufficiently mature men. Supposing, for example, that in ordinary times 25,000 satisfactory recruits can be obtained annually. If, then, the number enlisted each year were limited to 15,000 in normal times, there would always remain a considerable reserve to fall back upon when emergencies should arise.

An absolute reduction of the Army without any compensating advantages from a military point of view is, however, a step which is hardly likely to be seriously proposed at the present day, and if proposed, it is not likely to meet with the support of any but a few harmless enthusiasts. Our obligations and our liabilities grow yearly more extensive, and we are continually having proof that our troops are barely able to respond to the demands that are made upon them. A reduction of their number would imply a reduction of the territory to be defended.

The reduction of the number of recruits annually enlisted, if it necessitated neither a reduction of the standing Army nor of its elasticity would, on the other hand, open a way to overcome the present difficulties with the minimum expenditure. The two conditions, however, are not easy to reconcile, nor can they be fulfilled without having recourse to some expedient which has as yet never been tried.

The third and last plan is to adopt in some form or other for the Home Army the principle of compulsory service. This subject cannot be alluded to without treading upon delicate ground, and its discussion is an infraction of the code which shuts in questions of organization in England. The matter, however, is so urgent, and the difficulties of the voluntary system are becoming so great, that there is no resource but to examine every alternative.

Ten years ago it was stated in the Journal of the Institution[2] that universal service was a necessary consequence of the economical condition of Europe, and that sooner or later England would be

[1] Von Schellendorff: "Dienst des Generalstabes," 2nd Edition, p. 131. See Appendix.

[2] Major Hime, R.A., Gold Medal Essay, 1875.

driven to accept it. Since this was written no sign has been shown that we are any nearer to following the example of Continental Europe; but, on the other hand, throughout the rest of the world great and important changes have been steadily going on. Conscription has given way to universal service, and from universal service we have got to national armies or armed nations. In France it is now proposed to train the entire annual contingent, or in other words to make soldiers of the whole nation; in Germany and in other countries a large and increasing proportion of those who escape from serving in the active army are called out for periods of training, so that in time of war they may be available as reserves. In the last great war of 1870–71 the Germans made considerable use of their 2nd line troops, and it was their rule that all work in rear of the operating armies should be undertaken by them, so that the operating armies themselves should always be maintained at full strength. This principle is certain to be further developed in the future, and we shall undoubtedly see troops of the 2nd line taking their place in the armies of operation. The enormous costliness of modern war, and the consequent importance of obtaining the first successes, will impel nations to deploy at the earliest moment the greatest possible force. This is the most important result of the system of armed nations. The ultimate effect, it is clear, will be to make war between civilized nations much more infrequent and shorter in duration, but the operating armies will consist of almost the entire manhood of the nation.

These remarks are naturally applicable at present only to the military systems of the Great Powers of the Continent; almost every other nation, however, is following more or less directly on the same path, and at the present time the principle of universal liability to serve in the defence of the native land is maintained and acknowledged in the constitution of every nation of importance in the world, civilized, semi-civilized, and barbarous, with the sole exception of England.[1] In England, indeed, the principle of compulsory service is acknowledged in the Militia Ballot Act, but only in such a way as at the present day to have no practical value whatever for the purposes of modern war. Not only is it useless as a means of securing men to be trained in time of peace; it has not even the secondary advantage of affording us the power of obtaining recruits in time of need, for no machinery exists for applying it. It merely asserts a principle which, under existing conditions, it is impossible to carry into practice.

The question, then, may fairly be asked, Is our present position sound? Are we prudent in separating ourselves from the whole world in this matter and in ignoring the march of events? If the signs of the times are not wrongly interpreted here, the days of professional armies employed in home defence are numbered. They will be superseded by national armies, and the most progressive nations will endeavour to discover a means of training its rank and file without making the sacrifice of personal service excessively severe or

[1] *Vide* "Militair-Statistisch-Tabelle aller Länder der Erde."

excessively costly by reason of the limitation of the productive power of the country. In other words, it will be the aim of a nation to make its citizens good soldiers without making them any less good citizens. The value of Continental military systems, not only as a means of educating the people, but, in opposition to professional armies, as tending to promote peace, is acknowledged in our own journals.[1] Moreover, the practical impossibility of adapting an antiquated system of recruiting to the requirements of modern organization is at last beginning to make itself felt. A recent writer,[2] who has some grounds for speaking with authority, says: "From a careful examination of the subject, we are driven to admit that it does not appear practicable to maintain a short-service army of 180,000 men in a thoroughly efficient state by voluntary enlistment. When the period of service was longer, and re-engagements were more encouraged, we did not require such a large annual number of recruits, and could make a selection; now we need more of them, and the voluntary system cannot provide us with a sufficient number of men of the stamp we need. The time may come when the safety of our very shores may force us to recognize the advantages to be secured by all citizens alike being bound to render military service in the defence of their country. England, on account of her wealth, demands to be more jealously guarded than other countries which are less wealthy. Obligatory service will, no doubt, be an unpopular measure, but will be a better security for the nation than what she has at present. We need not impose the same burden as that under which Continental States groan, but it may be found possible to adopt some modified system by which all able-bodied men may acquire familiarity with the handling of arms and acting in organized masses."

Foreign critics are more outspoken in their remarks upon our military system. Making all due allowance for the natural tendency to over-estimate our dangers and under-estimate our means of meeting them, it may be well to inquire whether there is not a considerable modicum of truth in the opinions so constantly and unanimously expressed concerning our military power. The following extract[3] is but a sample of what is frequently appearing in the public journals:—

"That which the German has long considered his most sacred, inalienable right, to take his place among the defenders of his country, is looked upon in England as almost a disgrace. Hence there is no military science or real military education.

* * * * *

"But although England may at any time be engaged in all quarters of the globe, and fortune is not always so kind as in Egypt (witness the Majuba Hill), we find an indifference in England to

[1] *Vide* "Spectator," September 27, 1884.

[2] Colonel Furse: "Mobilization and Embarkation of an Army Corps," p. 82.

[3] From the "Militär-Wochenblatt." Translated by Colonel Bowdler Bell, Journal Royal United Service Institution, vol. xxviii, p. 596. The extract is too long to give in full, but it, and indeed the whole paper, should be read, not only by every soldier, but also by every politician.

things military, which to us is simply inconceivable. We hear everywhere that the soldier is unproductive capital, and that it costs the State useless sacrifices to maintain him. They do not understand that a nobly born people should feel it as a disgrace to be willing to hand over to hirelings the noble duty of defending the highest interests, throne and fatherland. Distinguished English Generals, such as Lord Wolseley and Sir F. Roberts, have recognized the dangers of England's torpor. Although England owes so much to these two Generals, their representations for the improvement of army organization have as yet had no real result; nor could they expect it, as they trenched on the vital point, universal service.

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"The present system must be abolished, for it is not enough to be merely passively organized in face of the great States of Europe. The nation that assumes a position in the world must be able to stand collision with the world.

"As England does not understand the real nature of war, and has not learnt from history that the fate of a nation may be sealed in a few hours, as she does not know that the conditions must be prepared in peace time in order to enter the battle-field with confidence as to the result, and that it is a fundamental axiom in strategy that war material is capital which must be spent freely in order to make profits, perhaps the old Napoleonic saying will be realized in her case, '*trop tard d'une année, d'une idée, et d'une armée.*' The fate of Carthage should be a warning to her. * * * Universal service, with its unquestioning fidelity and love of country, which make self-sacrifice a matter of course, is incomprehensible; * * * and it is not recognized that the Army is an immense national school where the subject is morally and physically fortified for the benefit of Throne and State, and educated to be a good citizen * * * ."

With respect to the eventual necessity of universal service, we find the following in one of the most important German publications:—[1]

"In the recruiting system also important changes have come into force, which, however, in our opinion, will only defer for a little while, the evil day—as it is regarded in England—of the introduction of universal service."

The present, however, is not the occasion to pursue this question further. The object of introducing it has merely been to point out that, if the signs of the times have been correctly read, if the days of professional armies for home defence are numbered, it is no more than prudent to look ahead, and to endeavour to march with the age. It is not suggested here that we should at once adopt the principle of universal service; such a proposition would meet with nothing but ridicule. The suggestion that is advanced is that the question should be thoroughly discussed, which it never has been, and that the country should be made to see it as it really is, and to understand its advantages on the one hand, and the sacrifices it entails on the other.

[1] Löbell's "Jahresberichte über Veränderungen und Fortschritt im Militärwesen," 188?.

At the present time compulsory service is to the Englishman a skeleton in the cupboard, a skeleton because it always has been kept in the cupboard. The views which prevail even amongst educated classes on the question date from the commencement of the century, when conscripts were torn from their homes to fight the battles and to minister to the ambitious projects of a dictator. Compulsory service to-day is a very different matter. The fighter is also a voter, the common soldier is a special constable, commissioned to carry out the decrees which he has assisted to pass. Let the cupboard door be thrown open, and let us see whether the skeleton is really as terrible as it has been painted.

The compulsory system could not, of course, be applied to the European Army in India, but should it ever be applied to the Home Army, the Foreign Service Army would reap the benefit, for the number of volunteers annually required would be greatly reduced, and the supply of recruits would probably be considerably in excess of the demand without any additional inducements being offered. At the same time the separation of the rank and file into foreign service and home service soldiers would remove one of the principal objections which has always been raised against compulsory service when this subject has been brought forward.

The form of organization proposed in this essay is not dependent on the acceptance of the principle of compulsory service, but its successful working, and that of any other scheme, is most distinctly dependent upon the fulfilment of the two postulates referring to recruits. If these are not enforced, it is easy to see that the organization proposed will have little or no more success than that at present in force, and the method of working the system may be readily predicted. If the home service army cannot secure enough recruits, the men with the colours will be induced to remain, and the reserve will be starved. On the other hand, if the Indian Army is short of recruits, necessity will step in, and recourse will be had to the dangerous practice of drafting men from the Home to the Indian Army. Again, if the recruits of the Indian Army are enlisted when very young, the same step will be necessary; these men will be passed on to the Home Army, and the latter will send its mature men to India, and will, in consequence, be composed of the youngest and most immature soldiers.

Such results are the inevitable consequence of trying to turn out an amount of finished work greater in bulk than, or equal to, the raw material which has to be worked up, and regardless of the waste which is inseparable from the process of manufacture. The lesson is plain: before organization is dealt with, the foundations upon which organization rests must be securely fixed; before considering how to deal with recruits, measures must be taken to secure a sufficient number of them. It cannot be repeated too often that good organization is an impossibility till the recruiting question is placed upon such a footing that the quantity and quality of the men enlisted is such as to keep both the peace establishment and the reserves filled with efficient soldiers under all circumstances.

The leading argument, to the support of which this essay has been devoted, is that the local system in any form or shape is a system of organization unsuited to the necessities of the present day, because it tends to limit instead of to promote the development of offensive force. If this argument be sound, it appears certain that we must look for progress in an entirely opposite direction; we must endeavour to draw all the numerous fractions of the Imperial forces closer together, and to group them round one common centre. In India a reform conceived in this spirit is a goal which stands in front of us, and which it should be the endeavour of military legislation to attain. At present we have a dual system, two armies administered by two different departments, and altogether independent of each other, except for a not very clearly defined connection which exists between the Horse Guards and the European regiments in India. With an eye to purely military purposes and to the development of offensive power, it is clearly our interest to abolish this system, and to draw the two forces more closely together. The principle of unity of command is urgently needed here. It is not to be pretended, of course, that the native corps of the Indian Army can be governed and commanded in Pall Mall; from the nature of the case that is an impossibility. The result to be aimed at is to make the Indian Army a decentralized integral part of the combined forces under the Commander-in-Chief, so that in all points the two forces should be as nearly alike as possible, making due allowance for necessary differences occasioned by local and climatic causes. Whether it would be possible to bring the two forces under one administrative head, and to have the same Minister of War for India and the United Kingdom, or whether some *modus vivendi* could be established between the Indian Government and the War Office, which would have the effect of permanently removing the friction between the two departments, need not be discussed here. These are political questions to which politicians alone can give an answer. But the considerations must indeed be weighty which forbid a further development of the military systems of England and India on the basis of unity of command, and which, in doing so, prevent the Empire from developing its full power. It must never be forgotten that the question of the defence of India is closely bound up with this matter; so much follows directly from what has been said before. The interests of India are, therefore, dependent upon the solution of this problem. Before the Indian Mutiny we had a Royal and an East India Company's Army, which had no connection with each other; since 1861 we have had two Royal Armies with separate command and administration. What we require to-day is one united Imperial Army serving in every quarter of the globe.

Another and a most important gaol in the development of the principle of unity of command is closely connected with a subject at present attracting the attention of the public, that of Colonial Federation. At the present time our position is one of great weakness owing to the number of valuable points we expose to an enemy. Our possessions are almost all held on the purely defensive principle, and

mostly by local forces. From India and England alone can offensive operations be undertaken. An enemy, therefore, is free to select an infinite number of points in which to attack us, and, at the same time, he need only fear attack from two directions. Colonies not threatened cannot assist those which are attacked. It is true that the Navy is a more or less ubiquitous offensive force, but it is unable to assist in the defence of land frontiers, and it cannot carry the offensive principle to the farthest limit, for it can rarely reach the vitals of an enemy. Should Colonial federation ever become a reality, it is earnestly to be hoped that this state of affairs will be reformed. If each of the Colonies in proportion to its population contributed a quota to the Imperial offensive forces, we should then be in a very different position. Instead of having a number of points inviting attack, we should have this number from which offensive operations could be undertaken. All Colonies not directly threatened would then, in time of war, send their quota to join the main army, or would undertake a separate expedition against the common enemy, who would have to meet one large concentrated force, or several forces operating from different bases. In a great war we might, in these circumstances, count upon a Canadian, an Australian, a South African, and a West Indian contingent. The military forces of the Colonies would thus be no longer local but Imperial.

The examination of this subject makes it clear that organization in this country has many difficulties to contend with, and must under any circumstances be of a somewhat complex nature. This, however, is an additional reason for studying the subject closely, and for endeavouring to place it upon a sound and permanent basis. Yet the discussion of these matters within the professional circle can, unfortunately, do little towards bringing about the desired results. The military authorities have no power to make dry bones live. In questions of the nature of that discussed in this essay both the initiative and the final decision is in the hands of the country. The authorities may indeed suggest, but nothing can be done without the lever of a strong public opinion. It is one of the drawbacks of a purely professional army that the country regards its duty towards it to begin and end with the annual voting of a sum of money to be handed over to it. This is, however, not as it should be. Money is not the only thing, nor indeed the main thing that the Army requires from the country. It is above all things important that the latter should have an intelligent interest in its military system, and should be able to appreciate not only the calls which may be made upon it, but also the means it possesses to meet such calls. It should be able, too, to understand that good organization does not imply heavy expenditure, but precisely the reverse. Economy is the keynote of organization—economy in making a given number of men do the greatest possible amount of work, and in bringing together in time of war the greatest possible number of soldiers for the expenditure of a given sum during peace. If we examine our present position with regard to these matters, not from the point of view of the professional believer in nothing but leather, nor of the professional alarmist, but by dis-

passionately comparing ends and means, we shall find it impossible to deny that we are to-day, in the words of Napoleon, *trop tard d'une idée, d'une année.* It is the country alone which can decide whether or not the remainder of the quotation shall be applicable to us, whether or not it shall be said of us that in the time of need we were also *trop tard d'une armée.*

Appendix A.

Comparative Table of Numbers and Cost of the Standing Armies of the Great Powers of Europe.

	Strength of Army.	Cost in millions of pounds.	Percentage of soldiers to inhabitants.	Cost per head of Army in pounds.	Average cost of Army and Navy per head of population in shillings.
Germany.....	427,274	17·2	·94	40	8·49
Russia.....	760,000	29·2	·97	38	8·54
Austria.....	287,000	11·7	·77	40	6·72
Italy.....	210,373	8·2	·73	38	7·03
France.....	518,642	23·85	1·37	46	17·02
England[2].....	199,000	15·6	·57	78	15·06
	(130,000)		(·37)	(120)	

[1] From "Der Dienst des Generalstabs," by Bronsart von Schellendorff, 2nd Edition, edited by Major Meckel, p. 131.

[2] The numbers given here include the European Army in India paid for by India. The corrected figures are given in brackets below.

ESSAY.

SHOULD THE EUROPEAN ARMY IN INDIA CONTINUE AS AT PRESENT CONSTITUTED, OR SHOULD IT BE CONVERTED IN WHOLE OR IN PART INTO A LOCAL FORCE?

By Lieut.-Colonel W. J. Boyes, late Suffolk, and York Regiments.

"Per aspera belli."

Preface.

The question of Army Reform is of so abstruse a nature—involving complications Imperial, political, and financial—that no one but a master in the art of polemics, with an intimate knowledge and thorough understanding of the perplexities to be overcome, could adequately deal with the subject in all its bearings; in venturing therefore to cope with the task set before us, we acknowledge at once our inability to grasp, in the full measure of its importance, the vastness of the undertaking, and the difficulties therewith comprised; but, whilst the problem remains unsolved, and is open to competition, any side-light, or suggestion, which may offer fresh rays for development, will be of value, and, with this object in view, we cast our lot into the field of discussion.

I.—Introductory.

It is only by entering into the details and groundwork of Army organization generally, that we can arrive at a true conception of the difficulties connected with the maintenance of an European Army in India, under the same rules and conditions of service as govern the Army at home. That the present organization is unsatisfactory, and not suited to our foreign military requirements is universally acknowledged, and something must sooner or later be done, to remove the disintegration produced in the Army by recent innovations; it is necessary, however, in the first instance, to scan the progress of events since the introduction of "short service," and trace the effects thereby occasioned, before proceeding to suggest any measures of amendment or reform.

For years past—since the days of the Crimean War—a growing tendency to change and improvement in our Army organization

has been manifest, and few will hesitate to admit that some modification of the old system was much needed. The advanced reformers of the day, however, were not content to act on half measures, and determined at all hazards, and against all arguments, to transform our military system on the lines of the Prussian school. In vain did old and experienced Officers deprecate the sweeping measures proposed, and point out that, for an Army like ours, with half its strength abroad, short service could not possibly work satisfactorily. But to the reformers, these expostulations and protests were mere old-fashioned, crotchety notions. Their one idea was to establish an Army Reserve, and no reasoning against the inapplicability of the Continental system to our unique, insular, yet world-spreading dominion, would be entertained. They were uncompromising, and service was summarily reduced from twenty-one to three years.

Over fourteen years have elapsed since this short service came into operation, and we can now fairly criticize, by the evidence of fact and experience, the weak points in its framework. Seldom does any new scheme, however good in theory, produce at once in practice the sanguine expectations of the designers, and, in the present instance, it must be admitted by the most enthusiastic supporter of short service, that the Utopian state contemplated by the originators has not yet been attained.

Lord Cardwell certainly succeeded in arousing a lively feeling on Army matters throughout the country in 1870, and to him and the reformers of the obsolete worn-out old system much is due, for, notwithstanding the heartburnings and animosities evoked, there is much to be commended in the general principles of the new scheme, and had its introduction been based on moderation, it would, no doubt, ere this, have become harmoniously infused into and blended with the peculiarities of our military characteristics and circumstances; but, in their red-hot enthusiasm, they overshot the mark; plunged to extremes; unscrupulously and ruthlessly tore down and trampled upon time-honoured customs and historical traditions; and wrought a state of dissatisfaction and friction throughout the Service generally. The die, however, was cast; the Army has been remodelled, and the innovations commenced by one party have been carried on by the other at enormous expense, both in compensation and outlay for barracks,[1] and in providing the machinery necessary for the establishment of the territorial system on which the scheme is based.

It is hopeless now to think of upsetting past actions, and we must rest content to follow on the lines which have been set, readjusting and amending as occasion may require.

II.—Brief Review of Short Service Conditions.

Let us now examine briefly into the conditions of short service, and note the effects produced in the *ranks* of the Army, in the first instance (the less important object of its conception), and secondly,

[1] Three millions on this head alone.

on the Army Reserve (the mainspring of its construction and development).

Line service was at first set at three years, then five years, but, by the Act of 1870, the term of enlistment was fixed at twelve years' service—six with the line and six with the reserve—instead of, as formerly, ten years with the line, with power (if approved) to prolong to twenty-one years, with pension on discharge. This curtailment of line service is productive of incessant fluctuations in the ranks; no sooner does the boy mature into a disciplined soldier than a full-developed tide flows off to swell the figures of the reserve, and fresh elements in turn give place to new material. But beside Army Reserve "transitions," casualties caused by death, desertion, invaliding, purchase, discharge of bad characters, transfers to other corps,[1] &c., increase the steady drift, and in many cases the regiment in a few months becomes a mere skeleton. Referring to this perpetual *waste* Lord Airey's "Commission on Army Organization, 1879–80," remark:—"The evil is one which must not only affect the discipline of the Army, but adds enormously to the difficulty of maintaining its ranks at the required strength. This difficulty has been increasing for many years, and is one which requires very serious consideration."

Of the limited six years' line service term, about one-third may be set down as instructional, or qualifying, and the country reaps the full benefit of only two-thirds, or four years, of the soldier's contract. Take a country lad enlisted at eighteen years of age; at least six months are required to teach him the mere rudiments of drill and discipline; six months more to qualify him sufficiently to join the ranks; another year before his education, bearing, and constitution have become so far matured as to entitle him to the designation of "fairly trained;" but he could scarcely come under the category of a really efficient soldier under three years' service, or twenty-one years of age.

Lord Airey's Committee recommended extension of the line service term to eight years, and a compromise has ensued. By the Army Act of 1881, the periods of enlistments were altered to seven years in the line and five with the reserve; but this concession, valuable though it be, was found insufficient, and recently a very subtle ruse has been resorted to, viz.: three years' line service, with power to extend to twelve years, and then, if further disposed, to go on for twenty-one years with pension; in fine, long service in short service disguise, or, to use Colonel Stanley's expression, "going back to permissive long service."

III.—Short Service and Recruiting.

It is not within the scope or province of this treatise to pick

[1] "The strength of the home battalion on the 1st of a certain month this year was 40 sergeants, 16 trumpeters, 40 corporals, and 413 privates, including 264 privates (30 being recruits at drill) with less than one year's service.

"On the 1st of the following month the battalion was reduced to 40 sergeants, 16 trumpeters, 40 corporals, and 207 privates, including 34 with less than one year's service." (*Sir Lintorn Simmons's pamphlet on "Army Organization,"* 1881.)

to pieces all the blemishes and imperfections of the new scheme, except in so far as they affect the question at issue, viz., the condition of the European Army in India. It is, however, useless to consider any proposals for improvement or reform, without striking at the root or source from whence existing evils spring. That root undoubtedly is the precarious, unstable footing which Army service now presents to the recruit, without any ulterior hope or prospect to cling to on discharge. The ignorant, indigent, and unwary, may be caught by the "placards detailing in glowing terms the advantages to be gained by the youth of the country devoting themselves to the profession of arms," but to the great mass it is now pretty well known, from the living evidences scattered throughout the land, that except in a few isolated cases, the allurements contain no prospective inducements of a permanent solid nature.

This fact has been very forcibly pourtrayed by the author of "Lord Wolseley's Men" (*Blackwood, March* 1884):—"The conditions of service have been trifled with so often, that although the possibility of making a home in the Army is again temporarily within their reach, they know quite well that by a stroke of the pen all these regulations may be altered, and after a few years in the ranks they may be relegated to their former position, having forgotten the trade to which they were brought up, and having become, by reason of their time lost in soldiering, unfit to cope with their civilian fellow labourers in the vineyard. They now find themselves without employment, a burden alike to themselves and their friends, and fit only to swell the roll of loafers, and they must, as matters now stand, eventually prove a blot in the annals of our political economy. They are hampered, too, by a further tie—for being enrolled in the Army Reserve, they are no longer the free agents they were—and a far-seeing employer of labour will think twice before he engages in permanent work men liable to be called away at a moment's notice."

Extraordinary misconceptions on the subject of recruiting have lately transpired, and, however the discrepancies be explained away, the annually increasing deficiency in strength is, to say the least of it, suggestive of shortcoming in the system. These deficiencies have been disguised by the ingenious method of reducing the authorized establishments, and thus, to the casual observer, the disparity is scarcely observable; reference to the General Annual Return of the Army, however, reveals the alarming fact that the strength of the Army is now 32,887 less than it was in 1864. This has not resulted—as might be supposed—from any increase in the standard of height or age, for, on the contrary, whereas in 1870, the former stood at 5 feet 8 inches for infantry, it is now only 5 feet 3 inches, and the minimum limit of age has been reduced from nineteen to eighteen years.

Reduction of standard may perhaps ensure the enlistment of sufficient lads to swell the figures of recruiting Returns, but as to the quality and description of article procured, we refer again to Sir Lintorn Simmons's pamphlet (1880):—

"From the examination of the last published General Annual Returns of the Army, it appears that in 1877, 28,285 recruits were enlisted, of whom more than half (14,394) were under 20 years of age, and 29 per cent. under 19. These Returns also show that 9,226 of these recruits, or 319 out of every 1,000, had ceased to be in the Army before the end of 1879, the date to which the Returns apply. This enormous loss is by no means exceptional, the average for several years of recruits who have quitted the Service before completing their third year having been 300 per 1,000 of those enlisted and passed into the Service."

"As the number of deaths among these recruits could not have exceeded 226, 9,000 must have disappeared either by desertion, by being discharged, or bad characters, or by purchase, or as invalids, not a single man of them having gone to the Reserves."

With short service came also a change in the recruiting system, bounty was done away with, and enlistment for corps was confined to Brigade Depôts. The headquarters of the Militia also became embodied with the Brigade Depôt, and it was expected that this would lead to a flow of militiamen into the line; in fact recruiting in territorial grounds was based on the principle of establishing a close connection between the Line, the Militia, and the Volunteers, and this led to the suppression of *numerical*, and introduction of *local* designations for corps. An inspired article in the "Times" of 9th December, 1880, comments upon this new method in terms of unqualified praise:—

"Each regiment or brigade, for the terms will be synonymous, is to be christened anew, and it has been proposed to make the designation local rather than numerical. To most minds the choice will commend itself. There is nothing stronger than the spirit of locality, and by seeking to give it a large share in the *esprit de corps*, a moral element of good ought to be created, even more powerful than that which now exists."

This reads well enough, and if it were possible to procure lads locally for each county battalion, there would be good grounds for the argument; but the maxims of theory must give way to circumstances. As a matter of fact, country lads are not procurable in sufficient numbers, and recruiting is confined almost exclusively to certain areas and localities, such as manufacturing districts, or large towns, and amongst a very heterogeneous class. Readers of the "Standard" will have learnt with surprise the present condition of our *clan* regiments. Highlanders will not enlist, so the gaps in these kilted battalions are filled by recruits from the London streets. So also with our English corps. In nearly every regiment "London-Irish," or "Liverpool-Irish" are found in large proportion throughout the ranks. What "spirit of locality" can here be urged in support of the new theory which has been thrust upon the Army, in place of the long-established, well-tried regimental—or numerical—*esprit de corps?* Putting sentiment aside, however, for practical purposes in the field, for simplicity and convenience, can the new system, after four years' trial, be upheld in preference to the plain numerical title?

It must be admitted that in many ways double battalions are economical, and for purposes of exchange, transfer, &c., offer great facilities; but there is no reason why, whilst retaining connection with the territorial system, the individuality of each battalion, from the 26th to the 109th, should not be maintained under its proud old historical distinction.

IV.—Effect of Short Service on Army Abroad.

If at home there is difficulty in keeping corps up to their proper strength and standard of efficiency, the question of maintaining the complement of those abroad is a far more serious matter, and the failure to supply our foreign service requirements is one of the most prominent defects of the new scheme. In order to allay the pressing wants of the Army in India (where, owing to epidemics and climatic effects, casualties occur in far greater proportion than at home), various expedients,[1] such as transferring men from other corps, offering bounties to prolong service, &c., have been adopted; but these transfers and extensions are mere "stop-gaps" to prevent an inevitable collapse, and go to prove a state of rottenness in the working power and interior economy of the machine—good though the principle of action may be in theory.

But *numerical* strength is not the only urgent requirement of an army liable at any moment to be called into active requisition. Indian Regiments should at all times be composed of trained men of matured constitutions, fit to take the field at once. Sir Frederick Roberts, in his patriotic speech at the Mansion House, honestly exposed the unpalatable fact that very young soldiers are comparatively unfitted to endure the fatigue and hardship of a campaign; and in his more recent article in the "Nineteenth Century" (November, 1882), he has further very clearly shown that as regards health, young lads suffer in far greater proportion than older soldiers. For easy reference, his remarks are given here in full:—

"No one who has seen troops in time of great sickness can doubt that disease and ill health are just as likely to be the cause of military failure as even indifferent strategy or want of discipline. A reference to the various Reports of the Army Sanitary Commission, which have been issued during the last few years, proves incontestably that in India young men especially suffer and die.

"I will give a few extracts in support of this statement from the last Report, dated the 21st of July, 1881:—

"'Par. 12. The constitution of the entire Army, 57,571 strong, in 1879, was as follows, together with the ratios per 1,000 strength of deaths from fevers at each age:"

[1] The latest expedient is the re-enlistment of Pensioners.

Ages.	Strength.	Deaths per 1,000 strength.		
		Enteric fever.	Remittent and continued fevers.	Total fevers.
24 and under	22,531	6·17	3·46	9·63
25 to 29	19,028	2·73	3·10	5·83
30 to 34	8,987	1·78	2·67	4·45
35 and upwards..	7,025	0·71	1·99	2·70

"This abstract shows the proportions. The actual numbers lost at each age were as follows":—

Ages.	Total deaths.		
	Enteric fever.	Remittent and continued fevers.	Total fevers.
24 and under	139	78	217
25 to 29	52	59	111
30 to 34	16	24	40
35 and upwards..	5	14	19
Total	212	175	387

"It thus appears that 56 per cent. of the total fever deaths takes place in young men under 24 years of age, and that 65·5 per cent. of the enteric fever mortality takes place among them. In the same way newly arrived regiments in 1879 yielded a death-rate from enteric fever of 8·25 per 1,000, while the rate in the Army generally was 3·59 per 1,000."

"The effect of early service is shown as follows. Out of 57,577 men in 1879, the periods of service were:—

Numbers and years of service.	Total deaths.		
	Enteric fever.	Other fevers.	Total fevers.
First and second year, 18,521 ...	148	70	218
Third to sixth year, 21,513	47	68	115
Seventh to tenth year, 11,278...	14	21	35
Ten years and upwards, 6,265...	3	16	19

"The death-rates per 1,000 strength at the different periods of service from fevers were as under:—

Years of service in India.	Ratio per 1,000 strength.		
	Enteric fever.	Other fevers.	Total fevers.
First and second	7·99	3·78	11·77
Third and sixth	2·18	3·16	5·34
Seventh to tenth.....	1·24	1·86	3·10
Ten years and upwards	0·48	2·55	3·03

"'These facts show that nearly 47½ per cent. of the enteric fever mortality takes place in men of the first and second year's service, and that the same ages yield 56·3 per cent. of the total fever mortality. The conclusion, of course, is that these young ages, when passed in the first two years of Indian service, are very fatal years from enteric and other fevers. We have already shown the influence of field service in Afghanistan in conducing to enteric fever mortality, &c., &c.'"

"This is given in more detail in another part of the Report, where it is stated that—'if the Armies of Madras and Bombay, with their low enteric fever death-rates, viz., 1·44 and 1·93 respectively, had been sent to Afghanistan, they would, in all probability, have yielded the same enteric fever death-rate of 6·84 per 1,000 as ruled in the Afghanistan Army; and the conclusion appears to be warranted that very young men are unsuitable for general field service on all grounds, while they would carry with them their peculiar liability to enteric fever, which would be increased under the conditions of field service.'"

"As regards dysentery, sunstroke, and other diseases from which troops suffer in hot climates, it is well known that young men are much more liable to be attacked than older and more seasoned ones. No more conclusive proof could be adduced against the employment of very young soldiers in the field in hot climates than the above statistics."

It may not be out of place to urge that Indian natives are remarkably shrewd and observant, and in a conquered country like India, to lower, *even in appearance*, the long established prestige of the British soldier, is injudicious and unadvised. It is superfluous to enlarge upon the self-evident truth that a system which entails such a constant *waste* in the ranks must, as a consequence, involve very heavy increase upon transport, both by sea and land.

But there is another point connected with the introduction of short service which, in the consideration of its bearing upon the requirements of India, is of vital importance, viz., the heavy and unequal burden which the scheme inevitably throws on the finances of that country. This question has been very ably dealt with by Lt.-Col. F. Chenevix Trench, 20th Hussars, in a pamphlet entitled "*Short Service, Indian Service, and the Army Reserve.*"

Setting aside all details of the financial disputes between the Indian and War Offices, we eliminate the following plain statement, showing in general terms the manner in which Indian service is affected by the new rule:—

"Under the Enlistment Acts prior to 1870, *i.e.*, when recruits were all enlisted for long service, India, when she incurred the expense of enlisting men and trained them, had the advantage of their services for many years. Under the short service system, while the cost of the recruit has been increased, the term of service has been diminished.

"India, therefore, while paying a larger charge, receives a smaller service, while England receives from India, as recruits for the Army Reserve, young, thoroughly trained, and seasoned soldiers immediately available for service.

"India, on the one hand, wants seasoned soldiers of matured constitutions and age, and is in nowise concerned as to whether, after serving their period of Indian service, they will be able or willing to serve as effective soldiers in the Reserve. On the other hand, with the War Office, the formation of an Army Reserve is, and must ever be, an object of the first importance, and no system of enlistment could be tolerated by it which did not hold out fair prospects of securing that end.

"As short service is the only means by which this object can be attained, and as it has been determined that India must necessarily pay for its recruits under the same system as that which is in vogue at home, it follows that the revenues of that country are, to all appearance, permanently saddled with the cost of a system in no way suited to her needs, and entailing an expenditure, the ultimate limit of which, judging from the experience of the past few years, no one has yet been able to foresee."

From the foregoing allusions as to the operation of the new scheme, we may fairly conclude that short service, in its present form, is not suited to the peculiar exigencies of our Army, and the shortcomings in the system which more particularly affect our forces in India may be briefly summed up as follows:—

1st. Failure in recruiting, and consequent insufficiency of supply.

2nd. Young lads are unsuited to an Indian clime.

3rd. Heavy expense of transport by sea and land, and the unequal burden thrown upon the finances of India.

4th. Comparatively inefficient state of regiments.

V.—Alternatives to meet existing Difficulties.

These difficulties would, perhaps, best be met by reverting to a local army, founded on an entirely separate footing, with its own depôts for recruiting and rules and regulations for service, pay, pension, &c.; but the deteriorating effects of an Indian clime must ever prove a moral obstacle to any scheme for the resuscitation of a *purely local force*. Past experience cannot be said to favour the

notion; it tends rather to condemn such an expedient as impolitic, and we are by no means disposed to agree with the advocates of the movement.

It may be said that the *carte blanche* to prolong line service is all that is necessary, but long service means ruination to the Army Reserve, and here again the antidote would only add to the dilemma. Reversion to twenty-one years with pension is no doubt, to a limited extent, a good sound measure, but is it wise to re-open the door to long service without restriction? It is well known that soldiers of more than sixteen years' service are, as a rule, comparatively broken down men, unfit for hard or active work, and their continuance in the Army must eventually prove an encumbrance to the Service, and a burden on the State.

There are in the Army many situations wherein the services of good steady old soldiers are invaluable, but the retention in the ranks of such men should be made a conspicuous distinction, and serve as a premium for good conduct. To those who with little or no education the chances of promotion are denied, selection for enrolment on a higher scale of permanent pension would indeed be a valuable boon.

Sir Frederick Roberts, in the "Nineteenth Century" already referred to, is strongly in favour of this:—"It is so desirable to have a certain number of old soldiers in the ranks, that, while I would not advocate retaining many privates over thirty years of age, it would, I am sure, be wise to permit a few—say 15, or even 10 per cent.—to serve their time for pension."

"I confess I should like to see a slight leaven of old privates in the ranks, partly because such men are invaluable as examples to young soldiers, and in controlling them at times when it would not be desirable for non-commissioned officers to interfere; and partly because we have in the Army a certain number of men who, from want of education, are unfitted for promotion, but who have nothing to fall back upon when their Army service is up."

"The characteristics of young soldiers are to play a winning game: to attack with dash where success seems probable; or even to stand up to superior forces when courage has not been damped by previous reverses, and faith in their leader remains unimpaired."

"Under such conditions they may even surpass their older comrades. But in times of danger and panic, when the bugle sounds the retire, when everything seems to be going against us, and when total rout can only be avoided by order and presence of mind, then it is that the old soldier element becomes of incalculable value. Without it a commander would indeed be badly off."

We have recently—in the fierce struggle at Tamai—had a noble example of the steadiness and value of old soldiers at a very critical period in the fight.

"The Colonel rose up, and, while the main body of his regiment was breaking into pieces, some thirty of his men rallied round him. There they stood, those true heroes, back to back, repelling with bayonet thrust the repeated onslaught of the Arabs who encircled him. Fifteen of Colonel Byam's men fell where they stood—their names are

given in General Graham's despatches—"*All the thirty were very old soldiers—and every man of the fifteen who perished bore three or four badges.*"

(*With Baker and Graham in the Soudan*, "*Nineteenth Century*," *June*, 1884.)

The conflict between long and short service—apart from foreign service considerations—rests mainly on the Army Reserve question. The highest authorities unanimously assert that an Army Reserve is essentially necessary, and any scheme for reform must therefore provide for this contingency.

VI.—Short and Long Service Combined.

In many ways conditions suitable for home service do not fall in with the special requirements of foreign service. Young lads may do very well in the United Kingdom, but, for India—as before stated—mature age and service are the specialities needed.

Instead, therefore, of making one hard and fast rule apply alike, without regard to local considerations, we hold to the opinion that it would be better to keep short service for the Home Army only, and have a mixture of long and short service for India and abroad, so that by the expansion of the first term of service, provision may be made for the one to merge into the other in course of progressive development; in other words, we propose that the Home Army should act as a feeder to the foreign, by passing on those men who now, in the prime of life and maturity of training—the very acme of Indian military requirements—are cast off *nolens volens* to the Reserve at seven years.

To carry out this idea in its integrity, it would be necessary to locate semi-permanently abroad one of the affiliated battalions of each regiment, and offer facilities for the exchange and transfer of Officers, non-commissioned officers, and men. Whether it would be more suitable to retain in India and elsewhere the battalions now serving abroad, or to select corps for localities according to their historical antecedents, is a matter of detail with which we have no concern.

There is a matter of vital importance connected with the proposed arrangement which we would here very strongly urge, viz.: the absolute necessity for keeping the depôt establishments, recruiting, and training of each battalion entirely distinct, so that the home battalion may in no way become mixed up with the depôt arrangements of the foreign battalion. To preclude this, recruiting for the former should be entirely under regimental control, in the territorial district as much as possible; the recruits to be sent to regimental headquarters for training, &c.

Recruiting for the foreign battalions to be carried on at the Brigade Depôts, under the immediate control of the Officer Commanding the Depôt, supervised by the Brigade authorities.

In support of this suggestion, we again quote from Blackwood ("*The People and the Army*" *September*, 1884).

"The home battalion needs no depôt. It can fill its ranks wherever it may. And if the foreign battalion will only establish a depôt for itself at the county town, and attach to it competent instructors, it likewise will succeed in keeping its establishment complete, with men of mature age and thoroughly initiated into the regimental system. By the adoption of an arrangement so simple as this, the new order of things will get, what it never had before, a fair trial; and Reserve men, undisturbed except on great occasions, may succeed in finding what most of them fail to find, permanent employment in civil life."

As to the term and conditions of service, we propose to enlist for thirteen years' service: eight years with the line, and five with the Reserve; and to limit the periods of age, as follows: for Home Army, from nineteen to twenty-four; for India and abroad, from twenty to twenty-five.

Towards the expiration of colour service—say at seven years—we would leave it optional for men to elect either to complete the balance of their contract, in the line, plus three years Reserve service, or to join the Army Reserve.

On prolongation of line service, a bounty of 3*l.* to be paid for the first extension; 4*l.* for the second; and 5*l.* for the third; and men to be transferred to the foreign battalions.

Men of Indian battalions to be permitted to come home first—should they desire to do so—and re-engage at the depôt.

Men wishing to join the Army Reserve should—under special authority, if the exigencies of the Service do not interfere—be permitted to do so after three years' service; or after eleven if re-engaged.

This inter-blending process—when taken into consideration with other advantages on discharge, fully detailed hereafter—would, it is assumed, ensure a free and steady flow of trained men into the foreign battalions, and keep up that state of efficiency so much needed. The plan, moreover, does not militate against Army Reserve prospects, but would, in due course, serve to supply its wants.

Here again the weighty opinion of Sir Frederick Roberts gives force to the conclusions we venture to put forward. In his article on "Free Trade in the Army," he says:—

"We must look for some system which will possess the advantages of both a long and a short service, by means of which a Reserve can be formed, an effective Army maintained, and the number of men serving for pension restricted to those who make the Army their profession, either from choice or necessity, and whose lengthened employment in the ranks will be well worth paying for."

"We shall thus, by a natural process, attain (as I ventured to suggest on a former occasion) an organization suited to the military requirements of our Empire, viz., a short service for home defence with its consequent reserve, and a long service for our Indian and Colonial garrisons."

VII.—Distribution, Localization, and Strength.

Our Army consists of 141 battalions, of which one half are constantly stationed abroad, the distribution being as follows:—

India	50
China and the Straits	2
Ceylon	1
Cape and St. Helena	1
Natal and Mauritius	2
Canada	2
Bermuda	1
Malta	6
Gibraltar	4
Cyprus	1
Total	70

According to present arrangements foreign service is limited to a nominal period of eight years, and in order to decrease transport service it has recently been ruled that all men proceeding on foreign service to India, &c., are to serve uninterruptedly abroad for six years. To effect this it became necessary to relieve each battalion by its own link. Special commendation has been claimed for this simple convenient arrangement, but the exigencies of the Service will not always admit of its fulfilment, and regiments must either remain abroad beyond the allotted period, or the rule must be broken through. Moreover, as Sir Lintorn Simmons pointed out in his "Times" correspondence in 1881, strict conformity to the rule has the effect of restricting the foreign service of corps to certain localities, so that one battalion or the other would always be serving in India, the Mediterranean, &c., as the case may be. This *quasi*-localization system does not, we venture to assert, carry with it the general advantages attached to the measures we now advocate.

Our foreign garrisons, particularly in India, China, the Cape, Natal, &c., should at all times be ready to take the field at once. Now, this state of preparedness cannot be fully maintained under existing conditions. New regiments are for some time comparatively inefficient; the men are not acclimatized; neither Officers nor men know anything of the language, customs, local ways and means, and those trifling minutiæ which constitute experience. Further, the whole character of our regimental "relief" system has, of late, years been changed by the application of this fixed period (six years) of foreign service. Formerly it implied the removal of whole battalions in bulk, but "relief" now consists in the transfer of *regimental headquarters and cadres* only (and all the paraphernalia appertaining thereto), with an interchange of Army Reserve transitionists and men who have not completed the prescribed limit of foreign service, &c. Thus, when the so-called "relief" takes place, a general disorganization ensues in both battalions, and, as a sequence, efficiency becomes much impaired.

The arrangement we suggest, whilst embracing the advantages of a steady supply of trained men, with an unbroken chain of efficiency, would be a saving of much expense, trouble, and inconvenience. Regiments would at all times be complete, and posted in local knowledge and experience, without incurring the risk of falling into old-fashioned customs and ideas; new blood with the same regimental feeling of fellowship would annually intermingle with well-seasoned, experienced hands, and thus the stagnating influences of locality would be counteracted; there would be all the advantages with none of the disadvantages of a purely local force. On the other hand, amongst the numerous invalids sent home there are many men (especially young ones) who, though unable to stand the vicissitudes of a foreign clime, are well fit for home service, or whose constitutions, after a short spell at home, would be sufficiently restored to admit of a second tour abroad. In this way a constant reciprocation between the battalion abroad and the territorial district would be maintained, and *esprit de corps* be fostered and engendered with mutual benefit.

For the first few years Indian service is very distasteful to young soldiers; they miss the accustomed haunts and attractions of a garrison town, but in course of time, as the aversion wears off, they settle complacently to the new life. It is now generally admitted that home change after six or seven years of Indian service is very desirable, if not necessary, and there is reason to believe that many men would prolong line service if only the opportunity of going home for a short time was open to them. In the good old days, when re-engagement at the regimental depôt was allowed, numbers of men availed themselves of the opening thus offered to go home and renew their old ties and associations, and then "took on" again for twenty-one years. In one regiment which we could name about two-thirds of the time-expired men who went home in 1868 re-engaged at the depôt, and re-joined the service companies in India within eighteen months or two years of their departure to England. But somebody, with commendable keenness for economy, saw herein a financial flaw, and the boon—for such it was—was stopped. Time-expired men had then no option but to re-engage abroad or go home for discharge, and many good men who would otherwise have gladly prolonged line service were forced to take their discharge.

With the exception of India, China, and Ceylon, the rest of our foreign garrisons are, for the most part, situated within comparatively easy reach; we propose, therefore, to divide foreign service into two separate and distinct localization zones or cycles—an eastern and a western. The former to comprise all troops serving in India, China, the Straits, and Ceylon; the latter all those in the Mediterranean, Cape, Natal, Mauritius, Bermuda, and Canada. But in order to preserve that mobility in corps which is so essential, it is necessary that each battalion should be moved periodically, say every three years, within the radius of its own sphere. Thus, the corps serving in India would be available for transfer to China, the Straits, and Ceylon, and not be confined to the limit of the three Presidencies only,

so, likewise, those in the Mediterranean, Cape, &c., might be interchanged with little or no inconvenience or expense.

With regard to the strength of battalions, at present we have 71 battalions in the United Kingdom on a peace footing of from 480 to 500 rank and file, and 70 abroad on an establishment of 850.

The peace strength is so weak that when men at musketry, gymnastics, cooks, tailors, shoemakers, school assistants, clerks, orderlies, canteen assistants, servants, bâtmen, recruits, sick, &c., are deducted, some 100 or 120 men at most are left available for drill. This is too small a number for tactical instruction, and efficiency can scarcely be looked for. In the event of war, too, when raised to 1,000 rank and file, more than two-thirds of the regiment would consist of reservists—men who for years, perhaps, have not handled a rifle, or been exercised in any way at drill—and the sudden importation of so large a proportion of strangers must be detrimental in its effect. The peace strength should not, we think, be less than 650 rank and file.

We propose to keep the 53 home battalions of the eastern zone at 650, and the 18 home battalions of the western zone at 850. There would thus be 17 full strength battalions in the garrisons of the Mediterranean, &c., and 18 more at home available at once for any small wars or contingencies, with 53 others capable of expansion at short notice to the higher scale.

By this arrangement the necessity of calling out Reserve men, "except in case of imminent danger" (for which occasion only they were originally supposed to be used), would be obviated, and one of the great obstacles to their employment by contractors, viz., the liability of being called away at any moment for Army service, would be removed. Moreover, in these days wars arise and develop so quickly, that the expediency of having ready at hand a really substantial effective Army to sustain the immediate shock and collision of war, instead of a mere skeleton framework, at the last moment to be hurriedly strung together, is a corollary which requires no argument.

VIII.—Basis of Proposed Scheme.

Amongst the multifarious measures and suggestions for reform, which from time to time have appeared in reviews, pamphlets, newspapers, &c., there is none so sound in principle as that advocated by the writer of "Army Organization," in the *Quarterly Review*, April, 1884. He touches the true key when he places before us, as the only safe guide for an Army reformer to follow—"The Duke of Wellington and his System":—

"For the British Army the Duke's system, so modified as to meet the requirements of the present time, is not only the best, but the only system on which it is possible to act with any assured prospect of success."

Let us refer to the model which the Duke introduced as the foundation on which the efficiency of the Army abroad was to depend:—

"I believe that I was the person who originally suggested the formation of the peace establishment of the infantry of the line of the

Army, each battalion into two bodies, one of six companies for service abroad, the other of four companies, called the depôt. The battalions were, as well as I can recollect, at that time 740 men, which numbers were divided as follows:—six companies, each of 86 men, 516; four depôt companies, 224 men. The objects of the organization were to provide for service abroad efficient battalions, and, at the same time, in some degree for the service of the United Kingdom; to provide for keeping complete in numbers and efficiency the service companies of each battalion employed abroad, by aiding in recruiting; by training to the discipline of the regiment, arming, clothing, and equipping the recruits, which should be raised; by sending them periodically as required to join the service companies abroad, each detachment of them under the command of Officers and non-commissioned officers to be embarked with them."

"In order to provide for the Service, and that each of these depôts might be able to render efficient service according to its numbers; not only were the Officers belonging to the several companies left complete, but it has been the practice, and it was originally intended, that all Officers at home and not employed on particular duty should be considered as belonging to, and liable to be called upon to join, the depôt. Thus the depôt system, as originally established, provided for keeping the battalions abroad complete in good, efficient, and well trained men. It secured for the service of the State the services of Officers, non-commissioned officers, and soldiers, while employed, and that to the amount in late years of not less than fifty-six organized, well-trained, well-disciplined, and well-commanded military bodies, each capable of performing all the services that might be required from the numbers of which it was composed. It was besides thought that the establishment of the depôt system would enable the Government at any time to augment the numbers of the infantry of the Army, or any part thereof, without any immediate addition to the number of Officers or non-commissioned officers, or increase of expense except for the additional men raised."

The main features of this scheme, it will be observed, are—

1st. To provide for the efficiency of battalions abroad by keeping them complete in good, efficient, well-trained men.

2nd. To provide employment for Officers at home, not engaged on any particular duty.

3rd. To enable the Government to augment the numbers of the infantry, or any part thereof, without additional Officers or non-commissioned officers, or creating unnecessary expense.

The first of these advantages would be fully met by the measures we propose for the Home Army to act as a feeder to the Foreign.

As to the second, it would no doubt be highly advantageous to adopt the system of attaching all Officers that may be available to one of the home battalions at Aldershot or the Curragh, during the drill season. They could thus receive the benefit of tactical instruction on a large scale, and have opportunity of becoming acquainted with all the latest improvements in arms, equipment, and military organization generally.

With regard to the third, the home battalion (which, for the purpose of supplying the wants of the battalion abroad in trained men, may be taken to represent the "four company depôt") is in every respect a far preferable system, because it is a tactical unit, complete in Officers, non-commissioned officers, and Staff, and could, at any moment, be expanded to war strength.

Our plan, we would contend, whilst combining the advantages of the Duke's scheme, provides also for the requirements of the times, by arranging to supply Army Reserve wants; and further, if followed out on the principle with which the idea is conceived, the objectionable practice which now maintains of converting the home battalion into a mere depôt for the one abroad would be avoided.

The basis on which the scheme rests is that of the Home Army consisting of a younger class, and of *passing on* those men who now, at seven years' service, go to the Reserve; *not that of transferring men during the first period of their service to fill up the gaps in the foreign battalions.*

It is very essential that there should be no misunderstanding on this point, and every care would be necessary to guard against merging into the grave error referred to.

Whatever objections or prejudices there may be to the semi-permanent localization of corps in India, it is clear that on the grounds of efficiency, economy, simplicity, convenience, and general utility, such a system commends itself to consideration, and is preferable to the only other alternative for meeting the military requirements of our Empire in India, viz., reversion to a purely local force.

An army thus constituted would at all times be under War Office control, and be bound by the same rules and regulations affecting pay, service, pension, and discharge, as maintain in the Home Army, and further, should emergent circumstances at any time arise requiring the loan of acclimatized troops from India, their employment beyond Indian limits would be hampered by no restrictions; and amalgamation in the field with the Home Army would give rise to no difficulties or complications as regards precedence, pay, command, &c., or to those minor frictions, so apt to occur in the operation together of two totally distinct forces. Associated with the territorial system, and bound by the ties of comradeship and affiliation, a moral influence for good would emanate throughout the ranks: the one army would be engrafted with the other, and both would operate alike towards contribution in the end, to one common national cause—the Army Reserve.

India, moreover, has long been the field or war school for the development of our military resources, and by continuing to supply Imperial troops for its protection, the useful lessons to be acquired by participation in its wars would still remain open to the Officers of 106 battalions, at some time during their service.

IX.—Short Service and the Army Reserve.

The establishment of an Army Reserve is the next phase of "short

service" to which our attention must be directed. This, be it remembered, was the prime object of its introduction into our Service, and very bright hopes were entertained of its rapid increase and development, so much so that Lord Cardwell deemed it necessary to fix the limit at 60,000 men. Instead of the anticipated overflow, the present effective strength, after fourteen years' growth, amounts only to some 31,000.

The wisdom of having within reach a tangible Reserve cannot be gainsaid, but in our natural sea-girt security, and backed by a powerful Navy—acknowledged to be the first in the world—we are comparatively free from invasion, and the matter is not, perhaps, of so vital importance to us as to Continental Powers. We have also our Militia and Volunteers; the former in case of emergency are available as a second line of defence, and the latter are the very backbone of any Reserve ever likely to be wanted in the United Kingdom.

Far be it from us to decry the value of the aim contemplated by the reformers; our remarks are intended to apply only to the "injudicious, suicidal policy of creating a Reserve at the sacrifice of the Army."

That the anticipations of Lord Cardwell have fallen short of expectation with regard to the Reserve is due in great measure to failure in the recruiting market, for, if at the flood-gate the influx is scant, so much less, in proportion to the waste along its course, must be the filtration at the outlet of the stream. Had short service brought with it a steady flow of good recruits, Army Reserve figures would doubtless ere this have reached the contemplated maximum; but a contrary effect has been produced, and year by year deficiency of supply has been the result. And, to insufficiency of supply must be added the consequences which ensue from the enlistment of puny lads and worthless characters, viz., desertion, invaliding, and premature discharges.

Allusion has already been made to one of the expedients adopted to prevent a total collapse in maintaining the ordinary Indian reliefs: we refer to the retention in the ranks (by means of bounty) of those men who, in the natural course of events, should have passed into the Reserve; and recently a further abstraction has been resorted to, viz., *the re-enlistment of pensioners belonging to the Reserve.*

Here is an anomaly indeed! The Army was destroyed for the creation of a Reserve, and now the immature Reserve itself is being depleted to sustain the Army, and this during peace!! Yet we are assured that military affairs were never in so flourishing a condition, and the brilliant little achievements in Egypt are held up in support of short service success. But the truth must be told, "nor will it avail to cast in our teeth the exploits of the troops that fought in Egypt and the Soudan. The Army which won the battle of Tel-el-Kebir was composed to a large extent of men drawn from the Reserve to take the place of some thousands whom, because of their extreme youth, the regiments left behind, and in Sir Gerald Graham's force the number of immature soldiers is exceedingly small."—(*Quarterly Review, April,* 1884.)

But this employment of Reserve men to replace untrained lads is more fully exposed in the following extract from a letter which appeared in the *Morning Post of 26th September*, 1884:—

"In one regiment, which was the first for foreign service of about 1,000 men, only 250 were pronounced fit to take the field, and when the battalion embarked 800 strong, it had about 550 Reserve men in the ranks, no less than 750 of its own men having been left behind."

Though the efficiency of the regular Army must ever be of paramount importance, the necessity of maintaining an adequate Reserve must not be lost sight of; in truth, the value of its aid in providing for shortcomings in the petty campaigns above referred to is the best evidence we can adduce as to the urgency for improving the stability of its resources, and ensuring the unobstructed provision of its supplies. This desideratum can only be arrived at by removing that feeling of distrust and dissatisfaction at Army service which now so generally prevails amongst the class from whence our recruits are drawn, and by making the Army once more popular.

To the following causes may be attributed the foundation of this distrust:—

1st. Constant changes in the terms and conditions of line service.

2nd. Deferred pay in lieu of pension, and the miserable consequences it so often involves.

3rd. That the Army is no longer a permanent profession, and holds forth no ulterior inducements.

Re-established on a settled sound basis, there will be no difficulty in procuring for the Army a good healthy robust class of recruits; and then, with the prospect of a fair average proportion of those who enlist completing their line term, may be hoped for a steady flow of contented men into the Reserve.

"Remembering the startling statistics of the 'waste' of the Army given by Lord Airey's Committee, and especially in view of the recent degradation of the standard of age and physique, one wonders how many of them will disappear without ever coming to anything, and thus involve an expenditure 'which it would have been far better for the Service if it had never been incurred.'"—("*Fifteen Years of Army Reform.*)

X.—Trade Teaching and Employment in the Army.

One of the most important matters bearing on Army service is the instruction of men in trades. "Opportunities of learning a trade" is set forth amongst "The General Advantages of the Army," published by authority; but as yet trade-teaching takes but a very small part in our military system.

Colonel Harrison, in his very able lecture at the Institution (February, 1882), says:—

"At foreign stations, those who have shown that they are thoroughly trained to arms should be *allowed* to learn some trade in the workshops which have been established for the purpose. (This could hardly, it is thought, be done in England, where the battalions, being

the training schools, are more constantly occupied than is the case abroad.)"

In India a great deal has been done to interest soldiers, and to induce them to usefully occupy their time; but it must be confessed that these praiseworthy endeavours are not fully appreciated, and the practical results, at best, are very discouraging. Although every facility and encouragement is given to the men to work in gardens and workshops, even to the provision of implements and award of prizes, comparatively few avail themselves of the opportunities offered.

"Company gardens" adjoining the barracks are, to a certain extent, cultivated by soldiers, and give satisfaction; but "regimental gardens" very often, if not generally, are kept up by native *malis*,[1] under the superintendence of a non-commissioned officer, and instead of being the field of labour and amusement as is generally supposed, they are only useful in so far as they prove remunerative by the sale of vegetables and provide a garden fund at the Commanding Officer's disposal, or furnish supplies of vegetables to the commissariat for rations; but, as regards the primary object—the recreation and employment of the soldiers themselves—regimental gardens are, for the most part, failures.

So also with workshops. At the outside some fifty or sixty men work steadily in gardens or workshops, but this is a small proportion out of 850 men.

The true reason for this want of interest is, because all such work is *voluntary;* without some concession in the way of relief from guard-duties, parades, &c., soldiers are loth to do more than their comrades, even though paid for it. But when all have to work alike, such as in road-making, &c., the case is very different, and they set to work with a will. The ordinary soldier's life, in India especially, is a very idle one, and it is much to be regretted that soldiers are not employed to greater extent, where it is possible to do so. Steady work and employment would not only prove conducive to better bodily health, but would tend in great measure to lessen crime.

To carry out any system of trade teaching satisfactorily it must be made *obligatory*, and if carried out on a well-organized plan the result, it is contended, would prove beneficial in many respects, not only to the soldier himself, but to the State, and be of great value in inducing a better class to enlist. Bandsmen, who in the sense of this proposition are tradesmen, receive, as a rule, extra pay, according to their proficiency as musicians, and to such men, on discharge, the benefit of having learnt a trade whilst in the Army is great.

It will be said that what with drills, guards, fatigues, musketry, gymnastics, school, &c., &c., it would be impossible to carry out with any success a system of trade instruction; but a great deal of time is taken up, not only in the training of recruits, but also of other soldiers, in mechanical, purposeless drills and exercises; and it may be possible to reduce station and regimental guards to a considerable extent.

[1] Gardeners.

Lord Wolseley's caustic remarks on this subject at the Institution, May, 1883, are as follows :—

"We have too much of the mechanical even in our field-days. There is too much of dressing upon points and going through the different phases of preliminary drill, which I think are useless, and not only useless, but dangerous. I think it is a very dangerous thing to tell a private soldier—who is not a highly educated man—that when you take him out for a field-day you mean to give him an idea of what an action is like; that you are going to exercise him in a manœuvre that is a fair representation of war; when what you actually do is to drill him in a barrack-yard fashion, and during the course of the day's proceedings to make him do ridiculous things, such as dressing-up and dressing upon points. The result of such a system of instruction is, that when he finds himself actually under fire, and in a difficult position, his head being, perhaps, a little turned by the excitement of the moment, he discovers he is not called upon to do what he was taught in the sham battle at Aldershot, and the result is a still greater confusion of mind, and a want of confidence in his Officers who had taught him so stupidly, and who by their method of instruction showed their ignorance of the realities of war. I think it is a very dangerous thing to teach a soldier in peace anything which he is not likely to practise during war. Of course you must naturally teach him a certain amount of simple drill to enable him to move with precision, *but everything not practical in its objects should, to lead him up to that amount in these days of short service, be ruthlessly eliminated from our drill books.*"

Sir Frederick Roberts, in his article on "Free Trade in the Army," speaks thus, on the same subject :—

"Further causes of discontent, which seem to point to the necessity of some elasticity in our Army system, are the many petty troubles and inconveniences soldiers are subjected to without apparently any reason or necessity: objectless repetitions of purely parade movements, constant guard mounting, with its accompaniment of impaired health from 'sentry go.'"

School Attendance.

It is questionable, too, whether compulsory school attendance is in all cases desirable. At present every soldier is bound to attend school until he can procure a 4th class certificate, or until it is evident, after two years' attendance, that he is too dense to attain to this degree of scholastic proficiency. Such men are not only a very great drag on the schoolmaster's time, but keep back other students who are both willing and anxious to improve their knowledge.

The education to be acquired in the regimental schools is, to a large proportion of soldiers, a very great boon; but to those who have had no previous instruction whatever and do not aspire to progress, the smattering they pick up is scarcely sufficient gain to make school attendance obligatory in all cases. Many an able-bodied youth who now spends from four to six hours

daily in school (when available) for two years, would be better employed in learning a trade, which, on discharge, would stand him in far better stead than being taught to scrawl his name. There are voluntary classes at night for those who wish to progress.

All recruits, after six months' service, should be required to elect for some useful trade, or calling, such as tailor, shoemaker, carpenter, mason, blacksmith, musician, clerk, servant, &c.; and, so far as circumstances permit, they should be trained and employed whenever possible in their respective classes.

For this purpose, at each Brigade Depôt, large garrison, and in each corps, trade schools should be instituted for the instruction and employment of soldiers. In due course certificates of qualification should be given, and all men certified as fit might be employed—under a specially qualified Officer—to do barrack or other military work, receiving working pay according to proficiency; or where there is a company or party of sappers, these men might be attached to assist in such work as they may be employed on. In India a great deal of the work now carried on by native contractors, under public works supervision, might be taken in hand (during the winter) by soldiers. At home, too, it is believed, a great deal of dockyard and other Government work might be done by soldiers.

By some well organized, carefully conducted system of trade teaching and employment, much of the idle time of our soldiers might be usefully occupied, and the Army be made more self-sustaining and attractive than it is at present.

XI.—"Deferred Pay."

No scheme for Army amendment or reform can be permitted to pass without scrutinizing the merits of the *bait* which has been supplied in lieu of pension, viz., "deferred pay."

To a penniless lad, there is something very tempting in the idea of pocketing 21*l.* at the end of seven years; and this temptation is further heightened by the prospect of his being able to save more than double this amount in the same period by savings from his pay. But, unfortunately, young soldiers are not often of a thrifty disposition, and few go off with any large savings; in the most exemplary cases, unless employment is forthcoming, the "nest-egg" must sooner or later be broken, and then is experienced the hollowness of the allurements so glowingly represented in "The Advantages of the Army, and the Conditions on which Young Men are Invited to Join Her Majesty's Forces" (procurable at all Post Offices).

Sir Frederick Roberts says of deferred pay: "Nineteen times out of twenty the money is of no benefit to the recipient, but rather a source of evil; it is soon spent, leaving him to regret that he ever left his regiment; and the position becomes very curious when it is found necessary to offer a bounty for continuance of service with the colours in India; for then the Government bids against itself; in one hand it jingles the sovereigns of the deferred pay, in the other the rupees of the bounty.

"Late experience has proved how powerful the former is in counteracting the attractions of the latter, for only a small proportion of those who could grasp at once deferred pay have accepted the large bounty offered for the extension of the Indian service."[1]

But there is a very serious evil attached to deferred pay, which General Higginson took occasion to draw attention to at a discussion at the Institution (January, 1882): "I allude to the deferred pay, which is now supposed to be so strong a temptation to recruits to enlist. My experience leads me to doubt whether deferred pay has produced the advantages which the country was led to expect. There is one point so dangerous in it that I have some hesitation in alluding to it; at the same time I think that we ought not to separate without being aware that one who has a right to know is prepared to assert that the deferred pay of soldiers is what is vulgarly called 'discounted' previous to their discharge. That alone is a very serious element of danger. The men borrow money, in short, upon a reversion which is practically inalienable, that is to say, nothing but conviction for felony or desertion can prevent the soldier who has earned his deferred pay from obtaining it on his discharge. It is not, therefore, very difficult, if a man desires to get away from his regiment previous to his proper term of service, for him to obtain through a money lender sufficient money to purchase his freedom. The same uncertainty and, therefore, danger, partially applies to his service in the Reserve; and when I tell you that within the last week, two of the Reserve men have applied to me, as commanding a district, one saying that he was in a state of starvation, and would give anything in the world to be allowed to re-enlist, because he could not obtain employment, being known to be a Reserve man; and another writes, 'May I emigrate, because three situations which I have tried for I have been refused because I am a Reserve man?'"

XII.—Employment on Discharge.

This state of things is a stain on our national pride, and sooner or later something must be done to remedy the evil. Conscription, it is said, is the only alternative; but conscription will never do in England —that all admit—and some expedient must be devised.

Until it is known and felt throughout the country that the profession of arms carries with it some ulterior State aid, or interest, and that it is a stepping-stone (instead of as now an actual bar) to civil employment, no great improvement in our military organization can be hoped for. That some system for the provision of employment of discharged soldiers, or of assisting them to obtain employment, would be a great incentive to enlistment, there can be only one opinion. Good men will not leave their work to join a Service which takes to its use the best days of their life, and then casts them adrift. The contract is too one-sided, and moral obligation alone demands some more permanent requital.

[1] 6,501 men are to return home from India during the ensuing trooping season.

Of course it cannot be expected that the State should give employment on discharge to every man who joins the Army, but much might be done by its moral support and impetus in helping good men to obtain situations, by establishing at each Brigade Depôt a home where discharged men might be registered for employment.

The expediency of employing discharged soldiers in various departments under Government has for years been the subject of discussion, and last year the matter was again brought forward in the House of Lords, but with no material result. The history of this important movement is told in a recent number of the "*Calcutta Englishman*," and we cannot do better than reproduce it here:—

"The discussion that has lately taken place in the House of Lords, relative to the bestowal of civil appointments in the gift of the State on deserving non-commissioned officers and soldiers, tempts one to believe that the memory of members of Parliament cannot be trusted for even a period of seven or eight years. It was on the 2nd of May, 1876, that the debate on the civil employment of soldiers and sailors took place, and that Sir Henry Havelock rose to move that a Select Committee be appointed to enquire, first: how far it was practicable that soldiers, sailors, and mariners who had meritoriously served their country, should be employed in such civil departments of the public service as they might be found fitted for. Secondly, how far it was practicable, in order to form and retain an efficient reserve force, for the State to become the medium of communication between private employers of labour and soldiers of the Army Reserve and Militia Reserve who desired to obtain employment, and that the Committee be directed to report on the best means of carrying those objects into effect. But, previously to this date, Lord Derby had delivered a lecture at the Royal United Service Institution strongly advocating the measure, and Archdeacon Wright had addressed a long letter to the press on the subject, in which the following expression occurs:—'What, however, would do more than anything else to make the Army popular, and the stripes worth having, would be the reserving of all subordinate appointments in the Civil Service for meritorious old soldiers, the preference being, of course, given to non-commissioned officers. There are about 120,000 appointments in the Civil Service, and of these only about 12,000 or 14,000 can, according to Lord Derby, be considered such as require more than intelligence and an ordinary education as qualifications. If it came to be known that, one way and another, there were annually some 80,000 good berths given to none but old soldiers and sailors, our ships and battalions would never want for good men.' Thus the debate on the subject became at that time one of great interest to the services generally. Sir Charles Trevelyan, in supporting Sir Henry Havelock's motion, said there were 100,000 appointments in the Civil Service, for the discharge of which the qualities required were good health, steadiness, exactness, the intelligence to understand orders, and the ability to carry them out, and these were the qualities which the military system was peculiarly qualified to call forth. Field-Marshal Sir J. Burgoyne stated that there were many qualities

peculiar to the soldier and sailor, which rendered them more eligible than others to discharge with efficiency situations in civil life. General Shute stated that the employment of old soldiers in the Civil Service was not regarded with favour in some of the departments. He did not allude to the heads of departments, but to others who did not like to see patronage slipping out of their hands. Again, old soldiers who were engaged at the War Office and Horse Guards, when they were superannuated, had the amount of their pensions deducted from the superannuation allowances. He should like to see a Return showing how many men were employed, say at the Horse Guards, in minor capacities, who had been servants of influential persons, and were not soldiers. Lord Elcho stated that Sir J. Whitworth had calculated that the value of the services of disciplined men, trained to obedience and combined action, were on the average worth 3*s*. a week more than those of ordinary persons. That the number of able-bodied men required for the railways alone amounted to more than 200,000. It appeared there was employment in the administrative departments, both civil and military, for 140 Officers and 1,000 non-commissioned officers, and that the employment would result in an annual saving to the country of 154,000*l*. Mr. Hardy then added that he was aware that it was a question that had been—even then in 1876—many years before the country. That the matter of employing soldiers in the different departments of the Government was one thing, but it was an entirely different matter for the State to interfere in order to supply private employers with workmen. Until the Reserve Force had attained a number of 80,000 or 90,000 men, it would be putting a tax on the different departments of the Civil Service, to find employment for all the men who, having left the Army, wished to find opportunities of utilizing their time in civil life. But he would give a ready assent to the assembly of the Committee. The Committee was at once convened. It would be impossible to attempt to give even the shortest summary of the evidence taken. But it was unanimous in favour of placing all civil appointments at disposal for soldiers, such as messengers, jail warders, park keepers, watchmen, rural post messengers, copyists, and many minor appointments in the clothing, supply, and civil departments generally of the Army. We give the evidence of the Duke of Cambridge on the subject. He stated that, in his opinion, it would be of the greatest possible benefit to the Army, in every point of view, if soldiers were, to a greater extent than now, offered the inducement of employment in the Civil Service, when they had completed their term of service in the Army. He also thought it would be of advantage to the public service generally, if soldiers were employed in the Civil Service, for the amount of training a man received while he was in the Army must tend to improve the character, and therefore to make him a better servant. A distinction between non-commissioned officers and men would be very objectionable, and the privilege ought to be thrown open to everybody. Soldiers were the very best class of men who could be got for messengers, and it would be for the good of the Army if all messengerships were filled by discharged soldiers. Rural

post messengerships, and temporary copyists, might also be filled by discharged soldiers. Better men for prison warders could not be obtained than old soldiers. In fact, in all employments where discipline and habits of obedience to order were essential, soldiers would be found very useful. He would still wish to maintain a certain number of civilians in the War Office, but he would like to see the lower grades more filled by persons who had qualified for the Army. He did not see why every department of the War Office should not be filled by Officers, non-commissioned officers, and privates. A register should be kept of all discharged soldiers so that they might be overlooked at any time, and thus placed in civil employment as vacancies occurred. It might naturally have been supposed that such a Committee, and the evidence obtained, would have produced some good results. But in the House of Commons on May 22nd, 1879, we read that Colonel Stanley, in reply to Sir H. Havelock, said that he had not lost sight of the recommendations of the Select Committee which sat in 1875-76, as to placing at the disposal of the Army, as inducements to non-commissioned officers to prolong their service to 21 years, a certain number of appointments in the Civil Service. The War Office was in correspondence with the Treasury with regard to those points which affected the Department. By comparing dates it will thus be seen that up to 1879 the subject was under consideration. It is satisfactory to learn, as stated by Colonel Stanley, that in 5 years the question had not been lost sight of."

"After the lapse of another four years the subject was again brought forward in the House of Lords by Lord Camperdown in July last. Now it has acquired a new phase. Although Lord Camperdown was warmly supported by the Duke of Cambridge and Lords Enfield, Normanton, and Wemyss, the most unpatriotic opposition was offered by Lord Redesdale, who expressed his opinion that men leaving the Army and Navy had already been sufficiently considered, and that domestic servants throughout the country should have a chance of getting the places in question. It thus lies now between the pampered butlers of England and the soldiers and sailors of the Army and Navy. If the benefits are to be equally distributed, Lord Redesdale would doubtless consider it advisable that these domestic servants should go through their six years' service and more in India, finishing up at Quetta for a hot season."

"It is the greatest slur on our administration that an important question of this nature, which has already been fully discussed, which has been enquired into by a Special Committee, before which the opinions of the most eminent soldiers of the day were elicited and found to be unanimously in favour of the measure, should be delayed over a long period of years and no definite orders issued. In the face of such inaction and procrastination, how can the present Ministry be surprised at men not re-engaging for a longer period of service, or looking unfavourably on the Army as a profession? It may be truly said that there is no reliance to be placed on the promises made to a soldier, when an Under-Secretary of State asserts, in 1879, that he has not lost sight of the recommendations of a Committee that sat in

1875. But the men who waited for the fulfilment of the suggestions were possibly lost to the country, as they in the meantime had settled down to other professions. Why cannot the Secretary of War be satisfied with Germany as a model on this question? In the German Army, as far back as 1867, it was decreed that N.C.O.'s, after twelve years' service, might obtain civil posts, if fit for it, in the following order. Firstly, those invalided, preference being given to those who were wounded or decorated. Secondly those half invalided, or fit for garrison duty only, and thirdly, those who have retained their health and strength. As long as there are military candidates for these situations, civilians were to be debarred from competition. In Austria there are no pensions for long service, but *old soldiers receive civil appointments instead.* In 1872-73 laws were passed in Austria and Hungary on this subject. By these laws, men who have been on the active list for twelve years, eight of which must be spent as a non-commissioned officer, acquire a claim to be granted situations in the public service, railways, steam navigation, or other undertakings which are guaranteed or licensed by the State. If these promises are an absolute necessity in a country where conscription is the rule, how much more are they needed where voluntary enlistment exists! There should be in England a distinct ruling of the State that all civil appointments which are deemed by the Commander-in-Chief suited to the non-commissioned officers and soldiers of the Army should be theirs by right, and that no civilian should hold them, if there were a non-commissioned or private soldier fit for the position."

In our numerous Colonies and Dependencies labour is at a premium, and if the vast fields for employment in Australia, New Zealand, Canada, the Cape, Natal, &c., were laid open to military emigration, many thousands of our discarded soldiers now wandering about hopelessly in search of work would have no difficulty in finding the means to provide for the necessities of life, if good situations are not immediately procurable. Such an institution as a Military Emigration Agency under Government patronage and protection would, on a well-organized system, do much to relieve one of the greatest evils produced by "short service without pension."

The boon to individuals would at the same time be a benefit to the State, as well as advantageous to the Colonies.

With the prospect of employment on discharge, or of bonus, free passage to, and grant of land in, one of the Colonies, many a country lad who now holds back because of the *blank at the end* of an Army career, would doubtless be induced to join its ranks for a time, and then (should its advantages not offer better opening) revert whilst still in his prime to his occupation or trade, at home or abroad.

XIII.—Conclusion.

In the natural order of events, the rudiments and germs of a scheme (on which its success must depend) form the prelude to final results; in the foregoing pages, however, our conclusions precede the

details; it remains, therefore, now to consider the ground-work and terms of our plan, and these we propose to arrange in the following categorical order:—

1. Enlistment and Recruiting, Line and Reserve service, Bounty.
2. Line pay, Good-conduct pay, Reserve pay, Pension (or employment in lieu), Bonus, &c., &c.
3. Trade schools, and trade homes or offices for the registration of discharged soldiers wanting employ, at all Brigade Depôts.

1. *Enlistment and Recruiting. Line and Reserve Service.*

Enlistment to be for 13 years' service, 8 with the line, and 5 with the Reserve. Age to be limited to from 19 to 24 for Home Army, and from 20 to 25 for foreign battalions.

At 7 years' service the soldier to elect either to prolong to 13 years' line service (with 3 more in the Reserve), or to join the Army Reserve.

Men who prolong line service to be transferred to foreign battalion (should the exigencies of the Service require it).

Men of Indian battalions to be permitted to return home first (should they desire to do so), and prolong their *first* term at the depôt.

Soldiers who prolong line service may extend the same to 16 years (if approved).

From these a selection to be made (but not to exceed 10 per cent. of strength) for prolongation to 21 years.

Bounty.

For the first prolongation a bounty of 3*l.*
„ second „ „ 4*l.*
„ third „ „ 5*l.*

Reserve Service.

After 3 years' line service men to be permitted (under special authority) to join the Army Reserve, or (in case of prolongation to 13 years' colour service) after 11 years (at the rate of 1*l.* per year of the bounty obtained).

2. *Line Pay, Good-conduct Pay, Reserve Pay, Pension, &c.*

In lieu of deferred pay we advocate an increased rate of daily pay, according to gradation of service; and good-conduct pay at closer intervals than at present, viz.:—

Daily Pay.

	s.	*d.*	
On enlistment	1	0	per diem.
After 6 years' service	1	1	„
„ 11 „	1	2	„
„ 15 „	1	3	„
„ 20 „	1	4	„

Good-conduct Pay.

	d.	
After 2 years' service	1	per diem.
„ 5 „	2	„
„ 10 „	3	„
„ 15 „	4	„
„ 18 „	5	„

Reserve Pay.

	d.	
After 3 years' service	6	per diem.
„ 5 „	7	„
„ 8 „	8	„
„ 11 „	9	„
„ 13 „	10	„

At the above rates the cost of each soldier for the various periods of service would amount to—

	Daily pay.	G. C. pay.	Bounty.	Reserve pay.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
8 years	149 0 0	13 13 9	—	60 16 8	223 10 5
13 „	250 18 9	33 9 2	3 0 0	45 12 6	330 0 5
16 „	316 6 8	48 13 4	7 0 0	—	372 0 0
21 „	431 18 4	73 12 11	12 0 0	—	517 11 3

Pension, or Employment in Lieu.

This is the crucial point of any scheme for Army reform. General Bray, in a letter to "The Morning Post," dated 25th August, 1884, very truly says, "Pension is the palladium of the English professional Army; without it we can never have a contented and trustworthy Army."

Any prolongation of line service must involve Pension (or its equivalent) at full or modified rates, according to length of service.

Men who of their own accord join the Army Reserve before the expiration of colour service time, can of course have no claim upon the State for pension; but to those who remain on in the Army resigning all chance of advancement in civil life, some permanent requital is due.

We propose, therefore, a scale of Pension commencing at 6*d.* per diem, and increasing 1*d.* per annum up to 21 years' service, viz.:—

	s.	d.	
After 13 years' service.....	0	8	per diem.
„ 14 „	0	9	„
„ 15 „	0	10	„

		s.	*d.*	
After 16 years' service.....		0	11	per diem.
„ 17	„	1	0	„
„ 18	„	1	1	„
„ 19	„	1	2	„
„ 20	„	1	3	„
„ 21	„	1	4	„

Or in lieu of Pension some equivalent in the shape of Government employ, with deferred Pension.

Or, in lieu of either, a Bonus, free passage to and grant of land in one of the Colonies.

The Bonus to be regulated according to the following scale:—

		£	
After 21 years' service		50	
„ 20	„	45	
„ 19	„	40	
„ 18	„	35	
„ 17	„	30	
„ 16	„	25	(13 line + 3 Reserve)
„ 15	„	20	(13 „ + 2 „)
„ 14	„	15	(13 „ + 1 „)
„ 13	„	10	

3. *Trade Schools, and Trade Homes, or Offices.*

At each Brigade Depôt there should be a trade school for the instruction and employment of soldiers during their spare hours, and, in connection with the same, a trade home or office where discharged soldiers of good character might register their names for employment.[1] Such institutions would be of immense value to the soldier, and, if properly supervised, might be made really useful, reliable mediums for the supply to contractors and others, of labourers, workmen, servants, &c.

It rests with Government to take the matter in hand, and enlist the interests and support of Militia and Volunteer Offices, Local and County Authorities, &c., in thus removing from the soldier himself the burden of seeking for employment on discharge.

[1] The writer was not aware at the time when this was written of the existence of Horse Guards General Order No. 79 of 1884.

Friday, March 6, 1885.

VICE-ADMIRAL H.R.H. THE DUKE OF EDINBURGH, K.G., G.C.B., &c., &c., &c., Vice-Patron, in the Chair.

THE USE OF TORPEDOES IN WAR.

By Commander E. P. GALLWEY, R.N.

IN accordance with the wishes of the Council of the Royal United Service Institution, who did me the honour of asking me to read a paper on the subject of "The Use of Torpedoes in War," I have endeavoured to present to you, as clearly as I am able, the present state of efficiency of this weapon, and the degree of perfection which it has now reached.

As the time to which I am limited is insufficient to do full justice to my subject, I will, in the few remarks which I shall venture to offer, confine myself principally to those torpedoes which are in ordinary use in all naval services.

Before, however, we proceed to discuss the probable value and importance of the torpedo either as an offensive or defensive weapon in naval warfare, it would, I think, be as well for me to preface my remarks by describing briefly those torpedoes which are likely to play a prominent part in any future naval war, and to state the degree of perfection which they have now attained.

There are two classes of torpedoes which now form part of the fighting equipment of the majority of ships, viz., the stationary mine and the locomotive torpedo. The former are of the simplest kind, and are ordinary cases of explosives moored to the bottom, and exploded either by electricity, or by some mechanical arrangement. Each ship of a fleet carrying these mines is able to lay down a small group of torpedoes for the defence of a harbour, the efficiency of the defence being governed by the number of ships collected together.

If circumstances compel the fleet to leave some harbour which has not previously been defended by the submarine mines of the Royal Engineers, they would be able before leaving to lay down a complete system of mines very rapidly, and to entrust the actual firing of the mines to a few men left behind for the purpose, or even to the care of some local person acquainted with electricity. Another use of mechanical mines, that is, those that being once laid down are difficult to remove without exploding them, is to block up the mouth of harbours in which ships of the enemy are lying, and thus prevent

them from leaving, without considerable danger to themselves, until they have previously cleared a passage by sweeping or counter-mining. Recent improvements in mechanical mines have rendered this a very likely, and indeed, certain method by which fleets will be harassed.

Hitherto one great disadvantage of stationary mines has been the difficulty of laying them down so that they shall be moored at a proper depth below the surface. It takes considerable time, and it is an almost impossible operation at night to moor them efficiently.

The improvement referred to is to so fit the mine that when it is thrown overboard in any unknown depth of water it automatically takes up its right depth below the surface, and this result is obtained by a very simple arrangement, and one that is unlikely to get out of order. It was first invented by Lieutenant Pietruski, of the Austrian Navy, and has been largely adopted by several foreign Powers, more with the idea of quickly defending harbours with it, but still with the object also of using it to blockade an enemy in his own harbour.

These mines can be used in a fast torpedo-boat, which, steaming rapidly across the mouth of a harbour, would drop them at regular intervals, and thus form a perfect line of defence, which would effectively bar the ingress or egress of a ship until they were removed.

The details of the Pietruski mine are kept secret, and though we have a very similar one in England, which was invented by Lieutenant Ottley, R.N., I am unable to enter into the details of its construction.

Although these electrical and mechanical mines may at times be of great value, it is unlikely that they will have any very great influence one way or another in determining the result of a naval war, so I propose to pass on to locomotive torpedoes, which in my opinion must exercise a decided influence on all future naval operations.

Foremost among them is the Whitehead torpedo; in fact there is no other which can compare with it in efficiency. As every nation takes up the Whitehead, so they gradually leave off the use of the outrigger, the towing torpedoes, and others. I am strongly of the opinion that the outrigger torpedo should be entirely abolished in all modern fleets, as presenting a very small chance of success, and interfering with the use of a more efficient weapon.

It is to the Whitehead torpedo, therefore, as being by far the most formidable, and also that most generally adopted by all navies, that I wish especially to call your attention.

Diagram 1, Figs. 2–7 (Plate V), illustrates the various forms of the Whitehead torpedoes now in use, and I am also able, through the kindness of Count Hoyos, Mr. Whitehead's partner, to show you a sketch of the first model, from which the idea of a locomotive torpedo originated, and also to give you a short history of the invention. In 1864 Mr. Whitehead entered into an agreement with a certain Captain Lupuis to work out and improve an idea which the latter had conceived of a fire ship designed to run on the surface of the water, and to be steered by means of ropes led to each side of its rudder from the shore.

Fig. (1) is a drawing of the model which was made to illustrate his idea. In this model, motion was given to the screw by means of

No. 1. ORIGINAL IDEA FOR A LOCOMOTIVE TORPEDO
SCALE $\frac{1}{2}$ INCH TO 1 FOOT.

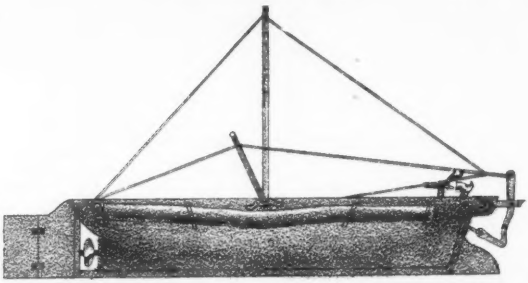


Fig. 1

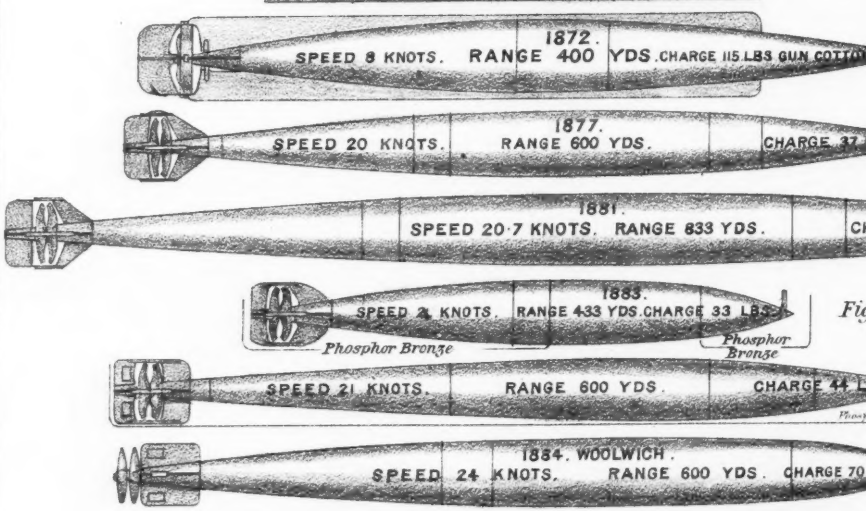
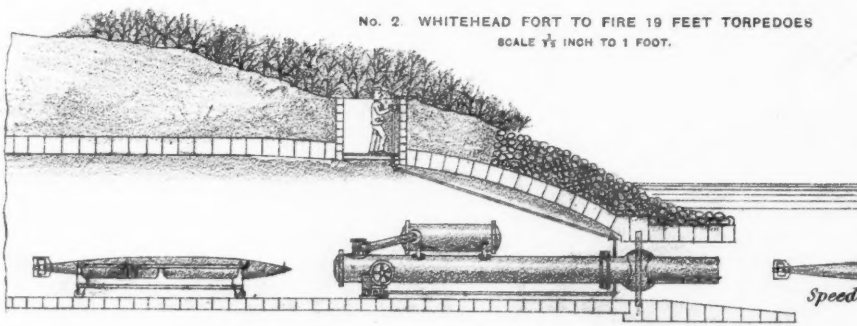

1872.
SPEED 8 KNOTS. RANGE 400 YDS. CHARGE 115 LBS GUN COTTON
1877.
SPEED 20 KNOTS. RANGE 600 YDS. CHARGE 37
1881.
SPEED 20·7 KNOTS. RANGE 833 YDS.
1883.
SPEED 21 KNOTS. RANGE 433 YDS. CHARGE 33 LBS
Phosphor Bronze
Phosphor Bronze
SPEED 21 KNOTS. RANGE 600 YDS. CHARGE 44
1884. WOOLWICH.
SPEED 24 KNOTS. RANGE 600 YDS. CHARGE 70

Fig.

No. 2. WHITEHEAD FORT TO FIRE 19 FEET TORPEDOES
SCALE $\frac{1}{8}$ INCH TO 1 FOOT.



Harrison & Sons, Lith., St Mart

No. 3. SECTION OF BOW OF H.M.S. "POLYPHEMUS"
SCALE $\frac{1}{24}$ INCH TO 1 FOOT.

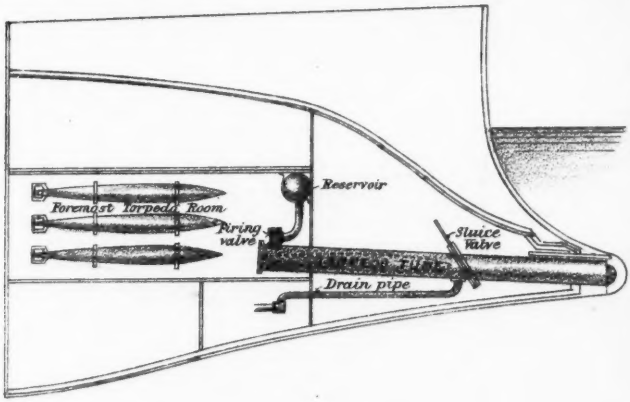


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

No. 4. BEAM TUBES IN H.M.S "POLYPHEMUS."

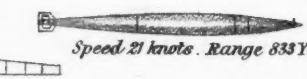
SCALE $\frac{1}{12}$ INCH TO 1 FOOT.

Fig. 5.

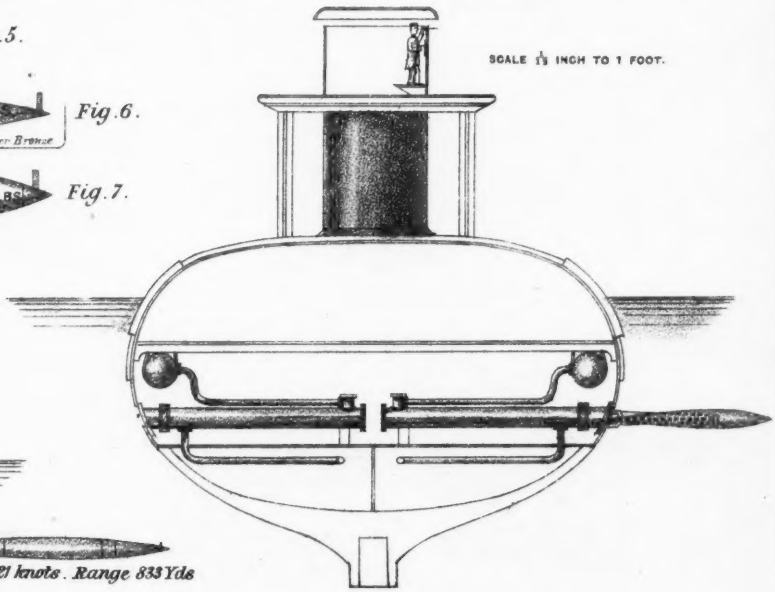
Fig. 6.

Fig. 7.

ORPEDOES



Speed 21 knots. Range 833 Yds



& Sons, Lith. St. Martins Lane, W.C.

clockwork, and the steering was effected by a rudder which was worked by small ropes from the shore. The forepart was filled with gunpowder, and the explosion was effected by means of a pistol placed in the head of the ship, the trigger of this pistol being in communication with a movable blade at the bow, and with one vertical and two horizontal spars; so that if any of these arrangements came into contact with the object aimed at the pistol was fired, and the charge exploded.

Though Lupuis's fire ship has really nothing in common with the Whitehead fish torpedo, it was the idea from which the latter has germinated. Mr. Whitehead, after two years' work, in which he was assisted by his son, then a boy of twelve, and a trustworthy workman, produced the first fish torpedo. It was made of a boiler plate, and carried 18 lbs. of dynamite, and had a speed of 6 knots for a short distance. In June, 1870, the English Government took up the matter, and carried out a series of experiments. These experiments proving successful, in April, 1871, the Government purchased the right to use the invention for 15,000*l*., the torpedo as it then was being shown on Diagram (1), Fig. (2).

Fig. (3) shows the form, &c., of the torpedo in 1876, its speed being then increased to 20 knots.

Figs. (4) and (5) show two later patterns, one 19 feet long, and the other 9 feet 6 inches.

The longer one is principally used from torpedo-boats and submerged forts. Its use from boats is advocated by many Officers, who say that it will be very formidable against ships at anchor, as its great range of 850 yards would in many cases allow you to get a successful shot before the boat was discovered, as numerous experiments have proved that it is often impossible to see a boat beyond this distance, and that if seen, the fire of machine-guns is very uncertain at this range.

A ship, of course, offers a very small target at this distance, and no doubt if possible you ought to get very much closer. But there are many cases which I have seen in sham attacks in which a fleet has anchored, and then swung in such a manner that a continuous target of at least half a mile in length was presented, and through which the torpedo could hardly pass without striking one of the ships. The great length of this torpedo, however, makes it a very unhandy weapon for a boat, besides which, its extra weight limits the number which can be carried.

For forts, however, it is very valuable; I would even go to a larger size, and thus increase either the speed or the range.

Diagram (2) represents a submerged discharging apparatus in a fort suitable for this class of torpedo. The torpedo fired under these conditions is more reliable than under any other, as it starts at nearly the same depth below the surface it is adjusted to run at. Under these favourable circumstances it is quite reliable up to 800 yards, and may, I think, always be depended on in tideless waters to pass under a target 30 feet long at that distance.

The smaller torpedo (9 feet 6 inches), is for use from boats, or

small ships, and is likely to come into very extended use for circumstances in which economy of weight and space is an object.

Mr. Whitehead's latest pattern is one 14 feet long, and is not shown on these diagrams; it has a speed of about 25 knots for 433 yards.

Fig. (6) Diagram I is the German torpedo made by Messrs. Schwartzkopff at Berlin. It is made entirely of phosphor-bronze, and is an almost exact copy of Mr. Whitehead's.

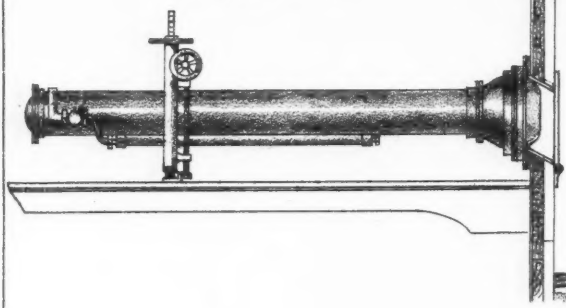
The adoption of phosphor-bronze for the whole of the torpedo has many advantages, the principal one being that it enables a torpedo, after being adjusted at the works, to be sent to sea without being again taken to pieces for cleaning, an operation which often, with steel torpedoes, affects their accuracy, unless it has been done with great care. The German torpedo is of excellent workmanship and extremely accurate; for instance, in 60 shots taken at Kiel the other day, the mean error in direction at 400 metres was 2·4 metres, and the depth was always within a small decimal of that at which the torpedo had been adjusted to run. These phosphor-bronze torpedoes have been kept for three consecutive weeks in the water ready for running, and at the end of that time have run perfectly. One of the uses which the German Government proposes to put them to is, to tow out and sink a sort of caisson (containing a number of these torpedoes in it) in the middle of a channel, pointing in a known direction, and to start the torpedoes by means of an electric wire led from the shore, and so practically to increase their range.

The use of phosphor-bronze, for the whole of the torpedo, appears, however, to entail a loss of speed. The air-chamber should therefore be made of steel, but all the working parts of phosphor-bronze. When this is the case the torpedo need seldom be taken to pieces, but of course it cannot be kept submerged for weeks without deterioration, but this is not so important a point as speed.

Fig. (7) shows the form of the Woolwich torpedo. This has a speed of 24 knots for 600 yards, and carries a charge of 70 lbs. of guncotton.

When the first torpedo was introduced it was never intended to be used from above water, but to be launched from a tube projecting through the stem of a ship below water. For this purpose the torpedo would not require to be of any great strength, as but little strain is brought on it while being ejected. With the introduction of the plan of firing from above water on the beam of ships proceeding at high speed, it was found necessary to make the torpedo very much stronger. Improvement in this respect, and also in the engine power, has been the direction of most experiments to improve the weapon. The torpedo has also been greatly improved by simplifying the various adjustments necessary. In fact, with the later pattern torpedoes, there are no adjustments which cannot be made weeks before the torpedo is used, so that it can be supplied ready for use, and all the crew have to do is to load the tube and fire it; if the working parts are made of phosphor-bronze, the torpedo can be returned into store after practice, without altering any of its adjustments.

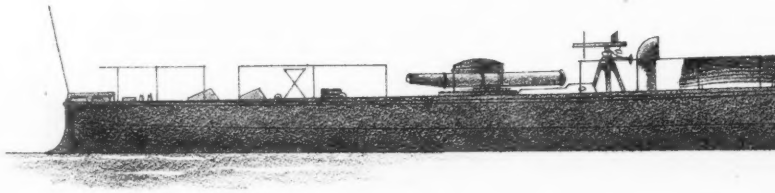
No. 5. ABOVE WATER TUBE FOR AN IRONCLAD
SCALE ½ INCH TO 1 FOOT.

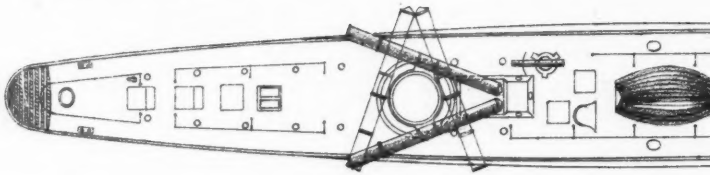


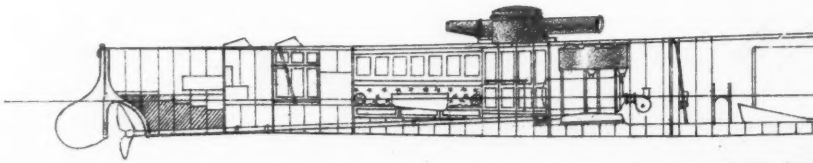
No. 6.

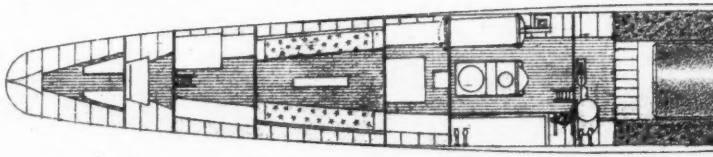
SPEED OF EDINBURGH, 1
SPEED OF TORPEDO, 20
RANGE 300 YARDS

No. 8. IMPROVED FI
LENGTH, 125 FEET. BE







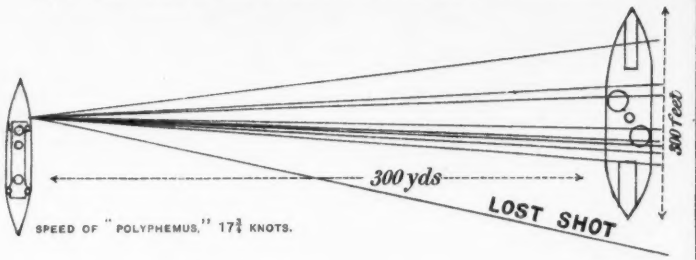


Harrison & Sons, Lith. St. Martin

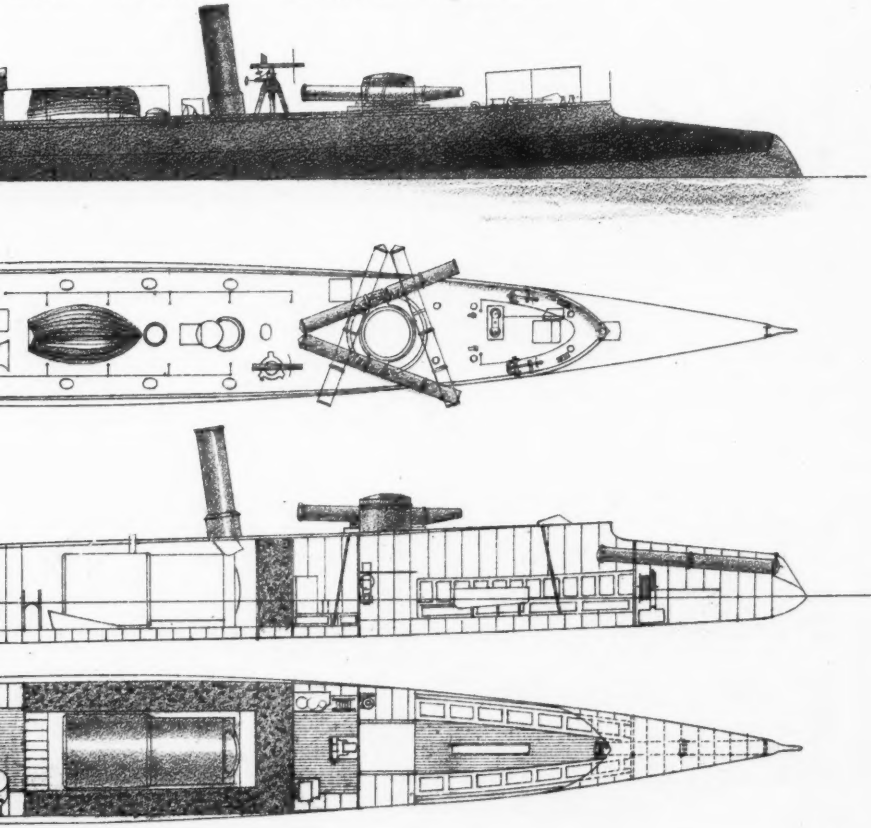
No. 6.

OF EDINBURGH, 15 KNOTS.
D OF TORPEDO, 20 KNOTS.
RANGE 300 YARDS.

No. 7. FINAL RUNS DURING EXPERIMENTS FROM H.M.S. "POLYPHEMUS."



. IMPROVED FIRST-CLASS TORPEDO BOAT FOR THE BRITISH NAVY.
125 FEET. BEAM, 12 FT. 6 INS. DRAFT, 6 FT. 2 INS. SPEED, 19 KNOTS.



& Sons, Lith. 5 Martins Lane, W.C.

A very large number of shots are fired every year in our Navy, and the number of injuries to the working parts, which used to be rather numerous, is now exceedingly small. For instance, in 1883, besides about 1,500 shots fired at home, the ships abroad fired 1,164 shots, and there were not half a dozen accidents reported to have taken place to the mechanism of the torpedo.

The torpedo can be discharged from above or below water. From below water, it can be discharged from a tube passing through the stem, the latest form of which is shown on Diagram (3), which shows the bow tube of the "Polyphemus." Very successful practice has been made with a tube of this description up to a speed of 18 knots.

On the beam the torpedo can be fired from below water through holes in the ship's bottom, the torpedo being supported by bars which can be projected from the ship's side, and which support it until it is clear of the tube. This device has, as far as I am aware, only been tried in the English Navy, the numerous ships fitted for submerged discharge in foreign navies only firing ahead in line with the keel.

Diagram (4) shows the general arrangement of the tubes on the beam of the "Polyphemus," the torpedoes being discharged from them by an Officer in the conning-tower pressing an electric button.

From above water the torpedo is launched from a tube known as the air-gun. The torpedo fits this tube with but little windage, and is blown out by means of compressed air admitted at the rear. Lately, gunpowder has taken the place of compressed air in many foreign ships, and no doubt the use of an explosive will become the general means of discharging a torpedo, as it enormously simplifies the discharging apparatus and lessens the chance of failure. Now that the torpedo is simplified to the extent that no adjustments need be made to it in action, and that it has only to be launched into its tube, a charge of gunpowder hung on the door and the door closed, the objections that used to be raised on the score of complications seem to be quite overcome.

Diagram (5), Plate VI, shows a modern tube mounted on the side of an ironclad, the tube being able to train through a large arc.

The advantages claimed for above-water discharge over below, is that the former is the simplest of the two; but the latter has the advantage of keeping the men under cover, and the torpedo deflects less when entering the water.

Before the value of the torpedo can be justly estimated, it is necessary to take into account the various errors which may occasion a lost shot.

The first error which may be introduced is when firing from the beam of a ship if the correct deflection due to the angle at which the torpedo enters the water is not allowed. This deflection is usually about one degree per knot of speed of ship, but it varies slightly according to the position in which the tube is placed. From below water on the beam the deflection is very small, while right ahead it does not occur.

Another error which must be taken into account is that due to the speed of the enemy being wrongly estimated by the Officer firing the

torpedo. Diagram (6) shows the amount of error which may be introduced on this account without resulting in a lost shot. This diagram represents the "Edinburgh" steaming at 15 knots on a straight course, being fired at by a torpedo-boat T with a 20-knot torpedo. In order to strike the "Edinburgh" amidships at 300 yards range, the torpedo must be fired at a point X when the "Edinburgh" is at A, in which case they will meet 26·6 seconds after the torpedo has been fired. If, however, the "Edinburgh," instead of 15 knots, were really going 18½, her centre would have arrived at X^1 in 26·6 seconds, and she would be just struck on the stern, or if she were only going 11½, her stem would be struck; so that the amount of error which may be allowed on each side of the true speed of the "Edinburgh" under these conditions would be 3½ knots each way, and if the speed had not been judged between these limits, she would have been missed.

The faster the torpedo, the less chance there is of the speed of the enemy being so badly estimated as to cause a lost shot. It is reasonable to suppose that in another year or so the speed of the torpedo will have increased to 30 knots; in fact, at the present time a torpedo has run 27½ knots. At the present time, however, the distance at which the modern torpedo may be considered as thoroughly reliable is, I think, 300 yards when firing at a ship in motion, and 400 at a stationary object.

The types of vessels from which the torpedo will be used are—ironclads and other large vessels; special torpedo-ships; and torpedo-boats.

And now I will draw attention to the subject which I hope will prove the main point of discussion this afternoon, viz., what is the probable value of the torpedo in a fleet, or single-ship action; will it supersede the gun and ram, or either of them? I am aware that whatever opinion is expressed it is open to the retort that it is all conjecture, for it has never been tried in action. But this argument can be applied to all or any of the modern weapons in a man-of-war. The arguments in favour of the Whitehead being successful are that out of an enormous number of shots fired in practice, the greater number run well, that if it does strike it will either disable or destroy the enemy, that with the torpedo you are not obliged as with the ram to engage in an encounter in which a slight error in judgment on the part of the Officer in command may cause the loss of his own ship, and that he will not have to use for the first time in action a weapon with which he can have had no practice in peace time. I argue, therefore, that the principal use of the torpedo will be in those circumstances which, before its introduction, would have led to the use of the ram.

Especially does the introduction of the torpedo appear to increase in many cases the value of accurate shooting with the guns; for instance, if you are engaging an enemy weaker than yourself in guns or armour, do you not throw away these advantages if you approach him so close that you risk an attack by a torpedo on the bottom of your own ship, a part in which you are as equally vulnerable as your foe? The latest naval action, viz., that between the "Huascar"

and the "Cochrane," has been so often described that it would be wasting your time for me to do so here. But it is a case certainly which seems to point to the immense superiority which the torpedo has over the ram; and, indeed, in this case not only over the ram, but also over the gun. Here is a small vessel set upon by two ironclads, who pound away at her for two hours, who try to ram her continually, and yet, although her steering gear was shot away, fail signally; yet when she surrendered, her engines were intact, and if she could have steered it is not unlikely that she would have escaped.

Is it possible to suppose that if either vessel had been fitted with torpedoes below water they would not have been able to use them successfully, when we read from the accounts of eye-witnesses that on several occasions the vessels were within 50 yards of each other, and once within 10; and that up to the last, though the "Huascar" was riddled above water, her steering gear gone, her guns and conning tower disabled, she was practically uninjured below, and her engineers were able to obey orders and work the engines?

If ramming were hazardous to the ship attempting it before, it is doubly so now when we take into consideration the large number of ships fitted to fire a torpedo right astern or nearly so. A miss with the ram, and a shave under the enemy's stern will now-a-days almost certainly result in a stern torpedo being fired from the enemy under the most favourable circumstances for that weapon.

I look upon the submerged bow discharge (Diagram 3) as one of the most important positions for a torpedo-tube. From the bow the torpedo leaves undisturbed by passing water, and hundreds of experiments in ships of all nations have shown that the most accurate practice is made from this position. I therefore contend that the torpedo has now arrived at a sufficient state of perfection to make it unwise of any one to attempt to use the ram, so long as he possesses a weapon which practically increases the length of his ram to 300 yards, and can be used with greater certainty and with less danger to himself.

Special Torpedo-Ships.

The numerous special torpedo-ships now built or building is another result of Mr. Whitehead's invention. The one that has caused most attention of late is the much-abused "Polyphemus," a model of which is on the table. Undoubtedly she has been a costly experiment, but at the same time a very successful one. The arguments in her favour are:—

I. That she has a very high speed, combined with fair manœuvring power.

II. That she can discharge her torpedoes with certainty either ahead or on the beam, when proceeding at full speed. See Diagram (7), Plate VI.

(This diagram represents the result of the last 10 shots fired from the "Polyphemus" during recent experiments; and I think there is no doubt that in the new vessel of the same type, about to be built, we shall greatly exceed the results already obtained.)

III. That her crew and weapons of offence are protected by the most perfect armour possible, viz., 10 feet of water.

IV. That she only presents a mark of 4 feet above the water-line.

What her special functions will be in action I leave to more competent Officers to deal with; but I argue that in the "Polyphemus" we have one of the most formidable engines of naval warfare yet built, and a type of ship which, unless some better protection than we have at present can be found for the bottom of an ironclad, may necessitate the abandonment of these monster ironclads in modern fleets.

With what weapon is the ironclad going to vanquish the numerous torpedo rams that are being built in every country, and of which class as a torpedo-ship alone, the "Polyphemus" is, I maintan, the most formidable? Undoubtedly all experience with heavy guns points to the fact that the guns of an ironclad cannot be depended on to hit, much less stop, a vessel moving at high speed, and showing only 4 feet of surface above water. She is proof against machine-guns, and being smaller, handier, and faster than most ironclads, should have the best chance with her ram, more especially as it is provided with a weapon that at the very least can be, and has been, discharged hundreds of times with the greatest certainty to a distance of 300 yards. If fitted with torpedoes, the ironclad has one weapon to fall back on, and that is the torpedo, for the "Polyphemus" must come within range of these in order to discharge her own, and being a good length would make a fair target. It would then become a question of speed and manœuvring power, as the fastest and handiest ship would be able to place herself in those positions where she could use her own torpedoes to the greatest advantage, and be less likely to be hit herself.

In special torpedo-ships of all classes, the conning-tower is the place of all others to be well protected, as not having guns to be disabled or a man to be seen, no doubt the fire of the machine-guns will be concentrated on this spot. The greatest care, therefore, should be taken that the accident which deprived the "Huascar" of her Captain and steering gear, 20 minutes after the action began, should be carefully guarded against. I should therefore, if possible, give all special torpedo-ships at least three positions from which the ship can be steered and torpedoes fired, keeping in view the fact that her main chance of success lies in the small mark she presents. If a submarine ship, armed with locomotive torpedoes, be ever built, then we shall have the most formidable antagonist for large ironclads it is possible to imagine, and the nearer the special torpedo-ship can resemble the submarine boat the more formidable does she become.

Of the numerous other special torpedo-ships which are built or building, I am afraid the time is too short to be able to discuss them; I have therefore only called your attention to the one which I suggest is the most important.

Torpedo-Boats.

Many lectures have been given in this Institution on torpedo-boats,

describing their general behaviour, size, &c.; so that I will not take up your time by describing any particular type of boat.

The principal use of torpedo-boats in time of war no doubt will be—

First—for coast defence.

Secondly—for the protection of the fleet from torpedo-boat attacks.

Thirdly—the attack of the enemy's fleet.

Torpedo-boats may be divided into two classes; those which are carried by ships, and those capable of keeping the sea and cruizing on their own account. The latter are the boats which are now being built by foreign Governments in large numbers. All foreign boats with which I am acquainted are constructed to fire only two torpedoes, both right ahead, while it is the opinion of our Officers that beam fire is of more importance. The success of a torpedo attack will depend largely upon the number of boats which can be brought simultaneously to deliver it. As regards the number of boats that can be brought up to deliver a simultaneous attack, I look upon eight as the proper number, for I do not believe it is possible to keep more than this number together at night.

For coast defence boats, I should say a length of 110 feet is quite sufficient; boats of this size have kept the sea when ironclads have had to take shelter. The smaller the boat, the greater number can you have of them for the same price; they are handier and present a less mark. I think, however, that boats of 110 feet and about 60 tons' displacement are, on the whole, the most useful size for coast defence, and they are also not too big, if you provide suitable ships, to be carried to any part of the world. That they can go by themselves, if necessary, is proved by the fact of the "Childers," a 113-foot boat, steaming to Australia by herself last year. But it entails very great hardship to the crew, and wear and tear to the boats. Possibly it may be very advantageous at times to be able to send a few of these boats to some foreign port, and there is a much greater chance of the boats arriving together in less time and in better order if they are hoisted into a parent ship than if they steam out by themselves. When once out at the port they are required at, they can be trusted to take care of themselves.

But in designing boats for coast defence, it should not be lost sight of that their value is enhanced by the ability, should circumstances admit of it, of despatching them in a ship to any part of the world quickly and without risk. Speed in a torpedo-boat no doubt is of the first importance; but I would not lose sight of other points almost as important, for the sake of maintaining this speed, and, after all, the greatest speed gained on the measured mile is seldom attained afterwards; and when will it be used? I think that in nine out of ten attacks it will be used for a very short time only. In the first place, if boats are making a simultaneous attack, they will go slow, as near as they can, and the signal for full speed will be the first shot fired by the enemy. The duty of the commander of a flotilla is to bring his boats as near as he can without discovery, and his orders should be, "Keep close to me until the first shot is fired, then go full speed and act for yourselves." In comparing the qualities

of a torpedo-boat, the turning power, seaworthiness, &c., should be taken into account, and not, as is generally the case, speed only.

The boat shown on Diagram (8) is the one now building by Messrs. Thornycroft and Co. for the English Government, and though she carries five torpedoes always ready for discharge, she is still not too large to come under the definition of a coast defence torpedo-boat. In this boat, speed has been sacrificed to a small extent in order to carry a bow-tube, and also two complete sets of torpedo-tubes, which can be trained round on steel conning-towers to any desired angle. In her, therefore, we shall be able to fire one torpedo ahead, and four on either beam, so that she is able to discharge almost simultaneously five torpedoes at her enemy, and this advantage surely compensates for the loss of a little speed, even if we do not take into account the advantage gained by having two conning-towers with a separate steering engine in each.

For harbour defence the torpedo-boat is becoming superior to the stationary mine; I should not be surprised, therefore, if before long it superseded it altogether. After many years we do not seem to have made any great advance towards the perfection of submarine mines; they cannot be laid far enough from the shore, and any modern gun can throw a shell far beyond the distance any electrical mine can be laid. The class of mechanical mine already described may no doubt be sometimes used with great advantage, but in the majority of cases the use of mechanical mines in our own harbours is impossible, as they close the harbours to friend as well as foe, and one of the principal objects of our coast defence should be to keep the harbours open.

These remarks apply principally to mercantile harbours where electrical mines must be used, which have the disadvantage of taking long to lay down and requiring fine weather to do it in, and which, when down, would not in most cases prevent the enemy shelling the town.

I think most people conversant with the enormous amount of *matériel* and trained men required to lay down and keep in order a system of electrical mines sufficient to defend a large port, will agree with me that it is an impossibility to defend all our harbours which are liable to an attack, and besides which at some of the northern ports for weeks together the weather is so bad that electrical mines could not be laid down, no matter how highly trained your men are. Torpedo-boats are, I should say, peculiarly well adapted for naval volunteers, as most of these latter have been brought up to the use of boats, and the other knowledge they could soon pick up. I should very much like to see a boat lent to one of the Naval Volunteer Corps, and see to what degree of proficiency they would arrive.

One thing is certain, that the efficiency of a torpedo-boat mainly depends on the amount of practice and experience the crew have had in her. A nation with no boats to practise with in time of peace will find but little value in the few she may hurriedly get together in time of war. I do not mean so much in the use of the Whitehead as in the art of handling the boat, keeping company with others on a dark night, and an accurate knowledge of the coast. The Whitehead does

not require much knowledge to be able to use it; its mechanism may be complicated, but so long as the crew can put it into its tube and pull the firing handle when the sights come on, but little else is necessary.

Last summer, when a fleet of torpedo-boats was attached to the Channel Fleet, then under the command of His Royal Highness, the following experiment was tried. Seven boats were lying one evening in Lulworth Cove, each of which was able to fire one torpedo; before dark the torpedoes were charged, and placed in their tubes, the tubes laid on a given angle, and the sights adjusted. Nothing more was done to the tubes or torpedoes till we attacked the Fleet at 11 P.M., in Portland, when, as the boats steamed past the "Hecla," each Officer pulled his firing lever as his sights came on.

The result was that three torpedoes struck the "Hecla" side by side in line with the funnel (the spot aimed at), and three more struck about 12 feet further aft in the engine-room compartment.

In this case we had experienced Lieutenants in every boat, each Officer having had a month's constant practice in the boat under his charge, but supposing these Officers had not been available, which is likely in time of war, it is quite possible that any man who had equal practice with his boat might have done as well, though not scientifically instructed in the use of the torpedo.

There is, I know, a very prevalent idea that the Whitehead is a very delicate weapon, difficult to work and keep in order. That this is not the case I think is shown by the following experience, gained during the Russian manœuvres last year. The Russians had divided their fleet into two squadrons, who were to attack each other in any way they thought best. One squadron when searching for the other passed within 200 or 300 yards from some fishing boats, the crews of which were busy with their nets. Suddenly a torpedo fired from one of these boats, struck the Russian flagship under the quarter. Not only did it strike, but a small charge in the head was also exploded by the action of the pistol, showing that undoubtedly a larger charge if it had been used would have exploded also. So the Russians were able to keep this so-called fragile and delicate weapon in a small fishing boat, and were able to discharge it with accuracy and success.

The Protection of Fleets.

In 1876 Mr. Barnaby, in a paper he read before the Institution of Naval Architects, said, while referring to the defence of fleets from torpedo-boat attacks, that "the assailants ought to be brought to bay before they get within striking distance of the ironclad by consorts armed like the attacking vessel, with the ram and torpedo. Each costly ironclad ought to be a division defended against the torpedo and the ram by numerous smaller but less important parts of the general forces."

At the time that paper was read the idea was warmly commended by such authorities as Admiral Sir S. Robinson, Sir E. Reed,

Mr. Scott Russell, and many others. Since 1876, this statement of Mr. Barnaby's has often been quoted by various authorities as an indispensable necessity for a modern fleet of ironclads. The other day at this Institution, Sir E. Reed said "that the craft we want is a torpedo-boat catcher and destroyer." The French certainly endorse this idea, for they have now on the stocks nine vessels of this class. I think that in the recent proposed additions to the Navy, the omission of this class of vessel from the official programme came as a surprise to most Naval Officers, especially as the absolute necessity of having them was pointed out ten years ago, and since that time the immense increase in the number of boats possessed by foreign Powers has made the necessity for this class of boat greater than ever.

The class of vessels represented by the "Scout" are not the class required, they are, I think, too big and costly, and are too important an item of the Fleet. The "Scout" (Diagram 9, Plate VII) would be an object of attack, and her destruction would compensate the enemy for the loss of one or two boats.

The only boat in England that I know of that comes up to the definition of a torpedo-boat destroyer is the one building by Mr. S. White, at Cowes. This boat is on Mr. White's turnabout principle, which gives extraordinary manœuvring powers, *both ahead* and *astern*. There is a model of this class of boat on the table, and Diagram (10) shows her turning circle as compared with a 1st and 2nd class boat. At first there might be some doubt as to the success of these boats when they got to a large size, but they are now past the experimental stage, as a boat recently tried, which was 90 feet long, 17 feet beam, and 90 tons displacement, proved as satisfactory as the 56-feet boat, making a complete circle in 75 yards ahead and 130 yards *astern*.

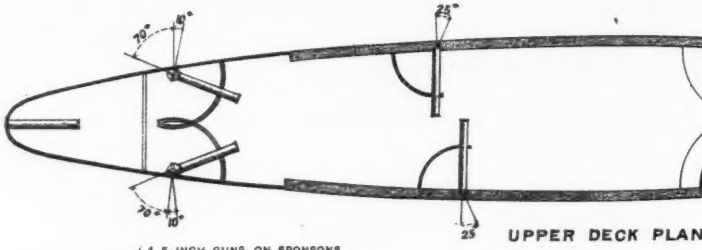
Diagram (11) shows a rough sketch of Mr. White's boat, also the size of the French boats. The dimensions given of this latter boat are, I believe, correct, but the drawing has been made from a written description, in order to illustrate its size as compared with the 110-feet boat shown in the centre.

Mr. Yarrow is also about to build for the Austrian Government two boats 135 feet long, with an estimated speed of 24 knots light and 22 knots fully loaded.

A torpedo-boat destroyer to be satisfactory must be superior to the torpedo-boat in manœuvring powers, size, strength, and if possible speed. The present idea seems to be to try and make one boat do both duties, that is to say, coast defence and accompanying a fleet to sea. The result is, we get a boat that is not the best suited for either purpose. For coast defence she is too long, draws too much water (7 or 8 feet), and is unhandy, while to keep the sea she is not big enough, nor superior enough in size to the boats she will have to encounter. What I would like to see would be boats of 110 feet long for coast defence, and about 50 tons displacement, and torpedo hunters of 200 to 300 tons displacement, on the turnabout principle, to accompany our fleet to sea.

No. 9. TORPEDO CRUISER "

LENGTH, 220 FEET. DISPLACEMENT, 1,430 TO

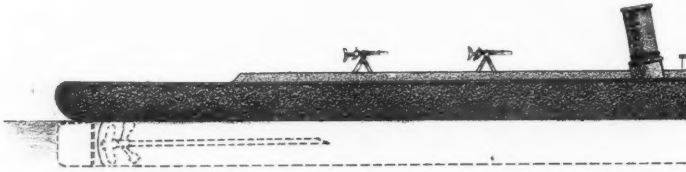


UPPER DECK PLAN

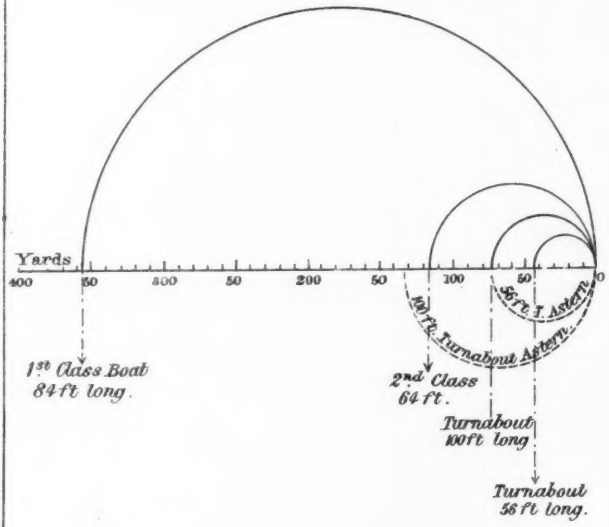
GUN ARMAMENT { 4 5-INCH GUNS ON SPONSONS.
8 1-INCH NORDENFELTS.
2 GARDNERS.

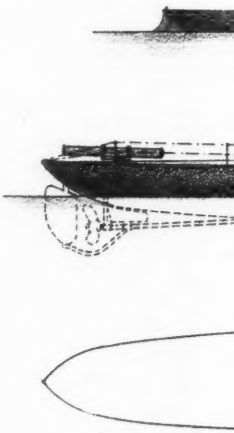
No. 11. TORPILL

LENGTH, 194 FEET. BEAM, 21 FEET. DIS



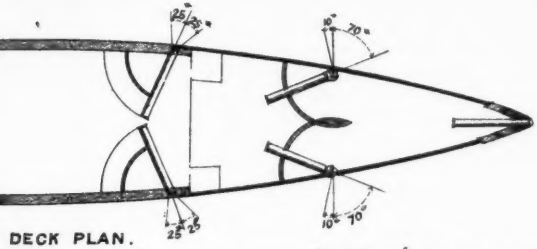
No. 10. DIAGRAM OF CIRCLES TURNED BY TORPEDO BOATS.



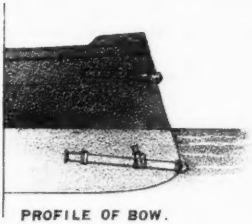


EDO CRUISER "SCOUT."

LACEMENT, 1,430 TONS. SPEED, 16 KNOTS



DECK PLAN.

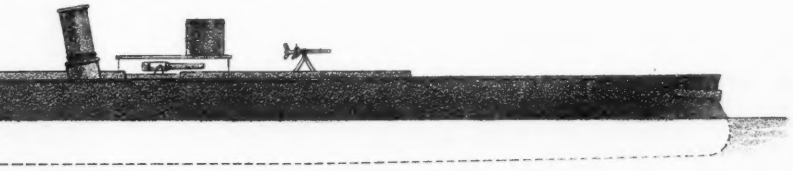


PROFILE OF BOW.

TORPEDO ARMAMENT { 11 WHITEHEAD DISCHARGING TUBES. 20 WHITEHEAD TORPEDOES.

No. 11. TORPILLEURS—AVISOS.

, 21 FEET. DISPLACEMENT, 316 TONS. SPEED, 18 KNOTS.

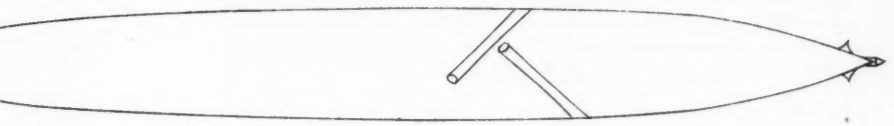


FIRST-CLASS TORPEDO BOAT. LENGTH 110 FEET.

No. 11. TORPEDO HUNTER.

BUILDING BY MR. S. WHITE, AT COWES.

LENGTH, 150 FEET. DISPLACEMENT, 220 TONS. SPEED, 18 KNOTS



Defence by Machine-Gun Fire.

As regards machine-gun fire, its value has yet to be proved, it can only be decided when war breaks out. Models of torpedo-boats fired at on a clear and calm day are generally riddled with bullets; it would be surprising if they were not, for as long as you can see the bullet strike on the water you can play on the boat if she is stationary with considerable certainty.

But these are not the conditions of a torpedo-boat attack, as it will generally take place at night or in thick weather, and if you cannot see the bullets strike, you will not know whether you have the right elevation or not till the torpedo strikes you or the boat is stopped.

I have never yet heard of an experiment in which the boat has been seen at night over 800 yards. Ask anyone who has seen three or four fast boats approaching a fleet at night how far they think they can be seen. Read the accounts of the experiments carried out in Russia, Germany, France, Austria, and Denmark; they all point to the same conclusion, that boats cannot be seen distinctly enough to be fired at before they are within range of their torpedoes. I myself saw last summer a fleet of six second-class boats get within 50 yards of the flagship of the Channel Fleet before they were discovered, although six electric lights were employed in searching round the fleet. The experiments carried out in England in May, 1880, by firing at models of torpedo-boats, show the number of shots which may be expected to hit a torpedo-boat.

In these experiments the mean result of six runs showed that the mean number of hits made from a ship steaming at 6 knots when firing at a stationary target was as follows, viz.:—

16 per minute from the Nordenfelt gun, and
6 per minute from the Hotchkiss.

The guns had the advantage, however, of continuing the firing up to a range of 100 yards, and the observers who were stationed near the target remarked that nearly all the shot that were fired *under* 300 yards struck the boat. In the report on these trials the D.N.O. remarked that he does not consider that the guns would have been successful in stopping a boat at over 1,000 yards, even in daylight.

So if we accept these conditions, the time the boat shown in Diagram (6) as attacking the "Edinburgh" would have been under fire would be 30″. And by the above experiments she would have received eight shots from the Nordenfelt and three from the Hotchkiss gun.

But the conditions in this case would be much more favourable to the boat, as she would not approach nearer than 400 yards before firing her torpedo, and the distance would diminish at a combined speed of 33 knots instead of 6. Of course in action more than one gun would be firing at a time, but probably more than one boat would be attacking, and though no doubt it would be a hazardous enterprise in the day-time, it is far from hopeless, and at night-time the boat would have the best chance. Anyhow I think it is generally recog-

nized among naval Officers that we cannot trust to machine-guns alone.

The question then is, "What is the best way of protecting a fleet?" and the answer seems to be "With torpedo-hunters," as proposed by Mr. Barnaby ten years ago, supplemented by either—

First, constructing the ship so that she is unsinkable, or

Secondly, by the use of nets or some other device for keeping the torpedo off the bottom altogether.

As regards the first, if there is a possibility of success by all means carry out the most exhaustive experiments at any cost, as it is of the utmost importance to us as the nation who ought to have the largest number of ships. I cannot offer an opinion as to the possibility of constructing a ship to withstand the concussion of a torpedo. But I would like to point out that after the experiments against sections of the bottom of the "Hercules," the charges of all locomotive torpedoes were reduced to 30 lbs., as this amount was found by experiment to be sufficient to fatally damage any ship afloat when exploded at a distance of 4 feet from her side. Since then, as more attention has been paid to watertight bottoms, &c., the charges are again becoming larger, and there is no difficulty in increasing them still more. Even supposing that you do render the ship by means of ironclad bottoms or other devices free from the danger of actually sinking at once, previous experiments seem to show that she will probably be disabled, so that the main object of the attack would be gained.

If any perfect protection against the torpedo be ever found, it will be something that will keep the torpedo off the bottom altogether. At present there is no satisfactory way of doing so. The nearest approach to any arrangement for this purpose are the nets supplied to our Navy, and although they cannot be used under every circumstance, still in many cases I am sure that they will be very valuable, and if practice with them is diligently carried out that we shall soon see a vast improvement in their general adaptability. Their use in a fleet action is as yet improbable, so that we ought to meet torpedo-boat with torpedo-boat, or better still with torpedo-boat destroyers, for that a fleet action will commence with a boat attack seems probable, indeed certain, or why are all nations building fast boats large enough to accompany the fleets to sea, one of which is attached to each large ship when performing fleet manœuvres, if this is not what they are to be used for?

In conclusion, I fear that many important points in connection with torpedo warfare have not been discussed in my paper, and that it illustrates more the present condition of the weapon than its probable use. I have necessarily limited it to those points which I suggest are most important, for which the time available for so large a subject must be my excuse.

H.R.H. the DUKE of EDINBURGH: I think, ladies and gentlemen, I may be allowed to express our very great thanks to Captain Gallwey for the very interesting and comprehensive lecture that he has read to us. I feel certain that there are many gentlemen present who will be glad to enter into some discussion with regard to the points in which they are most particularly interested which

are to be found in this lecture. Perhaps, however, I may be allowed to say a few words before the discussion commences, although any complete criticism on so exhaustive a paper would be entirely beyond my powers, and also beyond the time which we have at our disposal. There is one point in this lecture which I think has been very useful, viz., the lecturer has been very careful to divide his subject into two parts, and to use different terms when speaking of stationary mines and of locomotive torpedoes. I think in all future discussions upon this subject it would be well if the word "mine" were always used for the stationary and "torpedo" for the locomotive, for that distinction will be found most useful by those who have to deal with the subject. With regard to the locomotive torpedo itself, I shall not occupy your time with any remarks of my own, but I may say a word with reference to the boats. I am delighted to see by the two drawings which are placed before us that improvements are to be made in the construction of the new boats to be ordered for our Service, and I have no doubt that a great many of those improvements have resulted from the experience gained during that month's practice with those first-class boats last summer, for I find by the drawings that many of the defects which we then observed have been removed in the new designs. It has been very clearly pointed out by Captain Gallwey, and in that I quite agree with him, that it would be impossible for our many mercantile harbours—I do not allude to our arsenals and military ports—to be defended efficiently by submarine mines alone, and I believe that the most satisfactory way of defending those harbours will be by having a certain number of torpedo-boats of this description stationed at those ports. I think also that the suggestion as to whether the Corps of Royal Naval Volunteers cannot be utilized in that particular service is a very valuable one. There is one thing which is perfectly certain, namely, that great and constant practice will be absolutely necessary for those boats to be handled with any degree of safety to themselves or power of attack. The number of Lieutenants in the Service would not be sufficiently numerous to allow always of their taking command of these boats, for in time of war every Lieutenant that we have available will be required for the service of the fleet. It would, therefore, be an enormous advantage to us to find that we have a good auxiliary force at our disposal for this purpose. With regard to the very interesting description which has been given of the attack of squadrons by boats, I may say that one of the greatest difficulties with regard to the management of boats is that of keeping them together at night for combined attack. I do not attach such very great importance to a slight loss of speed in order to make the boats thoroughly efficient in other respects, because in approaching a fleet to make a night attack, up to a certain point it would almost invariably have to be made at slow speed; for although the boats cannot be seen until they get very near, and within a distance in which they can discharge their torpedoes, they are very frequently heard at much greater distances when going at a high rate of speed, but they are not heard so distinctly when they are going at slow rates of speed. Having made these remarks I will now ask Officers and gentlemen present to continue this discussion.

Admiral Sir GEORGE ELLIOT: Your Royal Highness, ladies and gentlemen, as I am not a torpedo Officer, and have never passed through the Torpedo School, I shall not attempt to offer any remarks with regard to torpedoes generally, but the few observations that I shall offer will be on the side of the ship defence. I congratulate Captain Gallwey on the paper he has just read, for I do not think it would be well possible to put together stronger evidence of the supreme importance of torpedo attack and defence. Captain Gallwey put the question, "What is the best way of protecting a fleet?" and he suggests, first, "constructing the ship so as to be unsinkable, and, secondly, "using torpedo-catchers." Now with regard to the torpedo-catchers, I fail myself to see how these vessels can escape from being destroyed by the torpedo-boats, which carry machine-guns and will strike at them as well as with torpedoes, because the catchers must get pretty close to the torpedo-vessels before they can expect to destroy them; and as the speed of the two vessels would be very great the encounter might last a few seconds only. However, although a certain number of torpedo-vessels attacking a fleet might in this way be disabled, I think the majority of them would escape. Imagine two fleets, the one of torpedo-catchers and the other of torpedo-vessels, meeting each other at 20-k n

speed, the torpedo-boats being determined on reaching the fleet. I consider that it would be more profitable to build an additional number of torpedo-boats rather than the same number of catchers. However, that is one plan of defence, and any plan of defence is most desirable. Then comes the next plan, which is to adopt any mode of construction which will render the ship unsinkable, I go further than that; I say any construction of a ship that will lessen the chances of her being sunk. I think it is almost impossible to make the ship unsinkable, but I think something may be done to render the ships less likely to be injured than they are at present. Sir Edward Reed proposed a plan a short time ago, and I myself some six years ago sent a plan to the Admiralty for a fixed torpedo-netting with a recess in the side of the ship and the fixed torpedo-netting below. I did so with considerable delicacy, because I felt that it was a difficult subject to treat, and that I might be laughed at. However, six years have passed, and I do not find that any other plan is more likely to succeed. I do not think it is likely that a torpedo-net—I call it a fixed crinoline—would be placed on any ships except vessels intended to fight in line of battle, because it must necessarily greatly reduce the speed; but although you might lose one-fourth the speed of the vessel, or, as Mr. Froude calculated one-sixth, which would cause a loss of speed on a 12-knot vessel of 2 knots, still, as I fancy most of our ships have 12-knot speed, I think a 10-knot speed when vessels are fighting in line of battle would be quite sufficient for all the purposes of a fleet. But the torpedo-net need not be on in peace time. I think it might be so fitted as to be fixed to a ship on the outbreak of war. I will not go into details. Sir Edward Reed's plan was to a certain degree following my plan without the crinoline, that is to say, that he had a deep cellular side and an inner ship of stouter iron. I am afraid that all experiments have proved that when the torpedo explodes in contact with a ship it will require an enormous defensive force to resist it, and that a water-cushion is almost the only means by which you can lessen the explosive force. Captain Gallwey speaks of torpedoes at 4 feet distance from a ship having injured it. Now if that is the case, my proposal was to place the crinoline 6 feet from the ship, and then to have a cellular side of about 6 or 8 feet more, that is to say, an inner ship with an outer ship below water. If that outer ship were driven in, notwithstanding the 6-feet cushion of water, the force that would drive that side of a ship in by a torpedo explosion would force the water in with it, and therefore I reckon that you might calculate upon having more that a 6-feet cushion of water. If the water accompanied the explosion it would enter the outer ship, and before it would reach the inner ship I think you would have to increase the charge very greatly of the present torpedoes in order to destroy a ship of that kind. At any rate we are doing nothing towards defending our ships beyond increasing the cellular construction and the number of compartments below water. I have always had a notion that there should be two classes of armour-clads, one specially adapted for fleet purposes, to fight together, where manœuvring would be limited, and the other for foreign service. The fleet ship would not require great speed; but the foreign-going armour-clad requires great speed, and nothing should be done to reduce that speed. Besides, the ship cruizing at sea attacked by torpedo-boats and having plenty of room, would turn away from them if she were alone, and I think then her gun-practice would be able to destroy the torpedo-boats unless their speed was greatly increased, because there is no reason why a foreign-going armour-clad should not have 20-knots speed. I have nothing further to say, except to thank Captain Gallwey for his very able lecture.

Captain P. H. Colomb, R.N.: Your Royal Highness, ladies, and gentlemen, I had the privilege of seeing a proof of this paper, and, having read it, I did not expect to hear it with the same sensations that have come upon me. My spirits began to fall from the moment the lecturer began to read, and they have fallen down almost to zero when thinking of the terrible complexities which will attend future naval warfare, and of the very great difficulties of settling what is the right thing to be done in view of those eventualities. Of course these discussions are of all things the very best for showing us our way in the future, or rather, not quite the best, but they are the best if they lead to that which the lecturer so justly urged, that is, the carrying out of very extensive experiments at all hazards and at all costs.

I think the lecture helps to clear away one part of the difficulty, and I believe the Navy is unanimous on this point—in fact, I have never heard a contrary opinion—that we ought to do away at once with the outrigger torpedo. The money that is expended on that torpedo ought to be devoted to things on which we are more certain as to their usefulness. Now, turning for a moment to one or two of the details, I take that diagram of the "Edinburgh" attacked by a torpedo-vessel. It happens that I worked that problem out to a certain extent, with a view of ascertaining whether the "Edinburgh" in such a case could by manœuvring avoid the torpedo. The answer is: Yes, she could, if she had manœuvring powers such as Mr. S. White has given us in small boats, and which I have not the slightest doubt can be got in large ships if we would only give our minds to it. As she stands she can, if she does exactly the right thing at the right time, just avoid the blow of the torpedo. If she puts her helm hard aport and reverses her engines instantly, she may just escape the torpedo—it may just go ahead of her, but no more. One of the chief features of our danger is the cheapness of the weapon. Here we are, a great naval Power, with a Navy costing us enormous sums, and we find ourselves put on a level, so to speak, with smaller naval Powers who need not spend nearly so much. The torpedo is a cheap weapon, and other nations can approach our heavy ironclads and put themselves on an equality with them in that way. The lecturer, in considering the relations between the torpedo and other weapons, said that the torpedo practically superseded the ram in those cases where the ram would otherwise have been used. On that point I think the Navy is almost entirely in agreement with him; certainly I am myself. I think the effect has been to push the ram back almost, if not entirely, altogether; for I cannot conceive anybody attacking with the ram if he can attack with the torpedo instead. He also said that it increases the value of accurate shooting. I think it goes still further than that—I think it has enormously pushed forward the importance of gun fire. I think all that the lecturer has said to us to-day shows us that the chief defence against the torpedo must be accurate gun fire, and plenty of it. He has pointed out that the machine-gun is not so fully reliable as some of us think. But the machine-gun is but a system after all; it is not any particular weapon—it is a system, and it simply means a method by which you can get continually increasing fire from a smaller number of guns—that as you have not much space over which to spread your guns in modern ships-of-war, you can increase the rapidity of their fire, and get the result in that way. And I think you must look to that as one of your chief defences. The "Huascar" case is often adverted to, but it always seems to me a double-breasted illustration—that is to say, there are two ways of looking at it. In the first place, it is perfectly true that the Chilian ships were a long time before they captured the "Huascar" by guns alone, but they did capture her, whereas if they had fired a torpedo at her they might have sunk her, and the advantage would not have been so great to them as capturing the ship. On the other hand, if the other ships had had torpedoes, the "Huascar" might also have had them, and they would have been on an equality. Coming to the "Polyphemus" type as an attacking ship, my own impression always has been that she is too expensive. If we are going to use torpedoes, and if the torpedo-ship is to displace, as I fear is on the cards, the heavy ironclad, she must be a much cheaper ship, and she must be much more of a regular sea-going ship. The "Polyphemus" has not yet had experience of anything like a decent sea cruize; I expect when she does get that decent sea cruize, opinions will to some extent change about her, for I suspect she will not be a comfortable ship for keeping the sea. I feel very strongly on the point as to the necessity of having numerous positions from which the fire of torpedoes can be directed. I have long felt it is a terrible thing in our ships to trust to one point alone from which the ship can be properly commanded. I think three points at least ought to be the number. I do not think it is necessary to defend these positions with heavy plating, because if you have them numerous and small, the chances are they will escape owing to the smallness of the target they offer. I will just make one more remark of a general character. I said how difficult it was to imagine what the future of naval warfare would be, and how complicated it was getting. We have a number of illustrations of that in the loud cry that goes forth now for the building of torpedo-boats. When we are told that Russia builds torpedo-boats, that Germany

builds torpedo-boats, and that France builds torpedo-boats, we say "Oh, we must have also numbers of torpedo-boats." But why do those countries want enormous numbers of torpedo-boats? Because they want to defend their harbours—that has been their object. They know that we are strongest at sea, and that they must have the means of keeping our fleets from blockading their ports. That is not to be our condition in war. I trust our place will be off the enemy's ports, and not off our own ports, and therefore I think we ought to consider very carefully indeed before we talk about spending so much money on these torpedo-boats, which must be essentially and chiefly "coast defence vessels," a term which I hold, I must say, in the greatest possible abhorrence.

Captain CURTIS: I must first of all congratulate the Torpedo School on seeing how correctly they can fire their torpedoes. We used to understand three or four years ago that they were rather erratic, in fact that they were likely to hit a friend as well as an enemy. With respect to the Barff process of preventing the rusting of steel, I think if that method were adopted, it would do away with the necessity of phosphor-bronze metal. The torpedo-boats give us a chance of coming to close quarters: I can compare it to boarding in the olden style, or broadside to broadside. If your torpedo-craft is faster than your enemy's line-of-battle ship, you must bring him to action; and, with respect to the mode of attack, I think the boats should attack in succession, inasmuch as they have got these pivot guns to fire the torpedo, and they could fire on the beam. I took a little extract from "Cassell's Magazine," for March, 1884, p. 253, with respect to the molecular action of water, and I find that a wave will travel 1,250[1] miles an hour, and that the molecular action of water is twice as fast as sound in air. I notice two or three of these experiments have been with vessels at anchor and also targets representing a vessel at anchor. There would be no wave from that target to divert the torpedo. There *would* be a wave from a vessel in motion, and I think that with respect to the manœuvring power of our ships, it is quite possible to give our double screws a double rudder. I think each screw should have a rudder, and there would be more facility in manœuvring with a vessel so fitted than with a single screw. I think a great many of us must regret a certain vessel being sent abroad so deficient in manœuvring power. Captain Colomb recommends that the "Edinburgh" should have reversed her screw to evade that torpedo. In action he would have had another torpedo-boat attacking him, I presume, and the ship would have lost her way, and have been subjected to another torpedo from the same boat also. I have understood that in action you should always keep the way on a ship, and keep her fully under command.[2]

Captain JACKSON: I must say one word of congratulation to begin with. I never heard a more interesting lecture in my life, and though the theatre has been crowded I never observed less tendency on the part of anyone to go to sleep. I think this is the result of the lecturer knowing thoroughly the subject that he is talking about. I should like to say one word for the present retention of the much-abused outrigger torpedo: not that I consider it a weapon which ought to be retained in any ideal navy, but because as a matter of fact we have got the outrigger in large numbers, but I do not know myself how many Whiteheads we have, or are likely to have. I should regard the outrigger as compared with the Whitehead, as about proportional to the bow and arrow[3] as compared with the breech-loading rifle, but having an army more or less armed with bows and arrows, I do not think it would be advisable to throw them away entirely until you can replace them by the more powerful weapon. With regard to the Whitehead, I am very glad to hear, as might be expected from Commander Gallwey's knowledge of the weapon, that he considers it most powerful. There is one little error in date that he has made here. The English Government first took up the matter in July, 1869; the experiments

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[1] M. de la Croix finds the speed of the molecular wave through the sea to be 1,250 miles per hour.

[2] Future actions will be a series of rushes or charges on the van or rear of your enemy, supported by your torpedo-boats.

[3] The spear would have been a fairer comparison; a weapon by no means to be despised in resolute hands.—T. C. J.

made by Mr. Whitehead in England were in June, 1870, but a small Committee had assembled at Fiume previously, and in consequence of their report Mr. Whitehead was invited to show his torpedo in England. There is one other question on which I must disagree both with the lecturer and with your Royal Highness, that is as to the defence of the mercantile ports, which is a subject which I perhaps know more about at present than about the torpedo-boats at sea. The object of mine defence of mercantile ports, or of any port, is to stop the enemy under the fire of guns. Artillery defence is associated, or should be associated, with the mine defence, and the object of the mine defence, whether passive obstruction or not, is to so delay the enemy as to make his ship a good target for the gunners on shore. Torpedo-boats will not have the effect of stopping a ship; on the contrary they will make her go as fast as she can, and therefore will defeat the object for which mines are laid down. But I hope it will not be supposed that I wish to at all run down torpedo-boats for the defence of mercantile ports. I only wish to say that the two defences, mine and torpedo, are both equally necessary, and neither should be neglected. With regard to the use of the torpedo in fleet actions, I think we know very little about it, but the general tendency I should say will be that gun firing in a fleet action will be minimized. The torpedo and the ram will decide the action. Artillery fire in a fleet action will never sufficiently disable the ships, even if their unarmoured ends, as some suppose, are more or less blown to pieces, so as to decide the action, and the principal use of the heavy gun fire, I should say, would be to make smoke enough to enable the ram and torpedo to be used with effect.

Captain SLEEMAN, R.N.: I must join in congratulating Commander Gallwey on his very interesting and able lecture. It is of course impossible to deal with all the points that he has raised, but there are one or two on which I should very much like to have some more information. And first of all as to the range of the (Whitehead) torpedo. Several torpedoes are shown on the diagram having different ranges, from 400 yards for the early ones, up to 833 yards for the large one, No. 4; but, in the course of his lecture, Commander Gallwey stated that in his opinion the *effective* range of a Whitehead torpedo is 400 yards against a ship at anchor, and 300 yards against a ship in motion. Therefore, I take it, the effective range of the latest Whitehead is at the outside 400 yards, and that is for a speed of 24 or 25 knots. Therefore the early pattern Whitehead, with only a speed of 8 knots for 400 yards, would have had an effective range of only about 100 yards. Thus for a Whitehead to have an *effective* range of 800 yards, it would accordingly need to have something like a speed of 50 to 60 knots at the very least. We then see that from 1872, when it was first adopted, with all the improvements effected in the torpedo, and on which enormous sums of money have been spent, we have raised the speed from 8 knots for 400 yards to 25 knots for 433 yards, but the effective range of the torpedo has only been increased from say 150 to 300 or 400 yards. I do not know whether I am right in my assumption, but if so I think it is a pity some of the energy and money expended has not been devoted to perfecting a controllable locomotive torpedo whose range is practically unlimited, which carries a great charge, and is a very valuable weapon; it might be used from a ship or from a fort. As to the spar, I must say I cannot agree with Commander Gallwey in wishing to do away with it, because the spar has the undoubted advantage over any uncontrollable torpedo, and even over an automatically controllable locomotive torpedo, that it carries with it the intelligence of the Officer in command up to the very last instant of attack. In the latest naval combat that has taken place in China, we find that the spar has been used with very deadly effect—three Chinese ships have been sunk already. In the last two instances I believe the crews had deserted them, so that it did not much matter whether it was a spar or any other torpedo that was used. In naval warfare there are sure to be many opportunities when absolute certainty is worth everything, and the spar has certainly absolute certaitny. Passing on to harbour defence, I certainly agree with the last speaker that the submarine mines have a part to play which cannot be taken up by the torpedo-boat; but still the submarine mines do require torpedo-boats to support them, and as it were increase their range. Another point which I have vainly endeavoured to understand is the necessity of these specially large extensive torpedo-hunters. I understand from Commander Gallwey's remarks that the ships of the fleet will in future

proceed to sea, each one with its hunter, or torpedo-boat destroyer; at the same time they are also each one to have a large sea-going torpedo-boat. The idea, I believe, is that the torpedo-boats of the two fleets are to dash at one another, and either have a small combat before the big ships commence, or to pass one another and get at the ships. There is great difference of opinion as to what really will happen, but why should you want to build torpedo-boat hunters, which are to destroy the torpedo-boats, of four or five times the displacement of the very boats they are going to destroy, and having actually less speed? That is a point I do not understand. We have here Mr. Yarrow, who is now building a torpedo-boat of which I have seen the ribs, and a magnificent boat it will be. There are two of those boats building for the Austrians, and they are to be 135 feet long, having considerable beam, with very much greater accommodation than any first-class torpedo-boat has now, and they are to have a running speed of 22 knots—24 knots light. What is the good of Mr. S. White, or anybody else, building a boat that only goes 18 knots to hunt this boat? If it is considered advisable by the Commander-in-Chief, let the torpedo-boats chase the other boats, or let them attack the opposite ships, but there seems to be great doubt which would be the best thing to do. Of course, it is impossible for me to enter on the machine-gun part of the lecture, but it is not quite right to say that the machine-gun trials so far have always been conducted in calm and fine clear weather, for I know of some machine-gun trials in Italy against torpedo-boats, in which the inventors of the guns were unable to fire them properly on account of their being sea-sick and the men as well, the weather at the time being very disagreeable. At the same time I quite agree that the experiments so far made between machine-guns and torpedo-boats are certainly nothing like what will actually occur in war-time, but I cannot understand how it is no arrangement has been made to endeavour to assimilate these experiments as nearly as possible to what will occur most probably in war-time. For instance, it seems to be imagined that the only damage to be done to the torpedo-boat is either to sink her or damage or blow her boiler up; but as far as I can understand the question I do not think that one torpedo-boat out of a hundred will be sunk, but that the attack will be frustrated by the machine-gun fire either damaging the torpedoes themselves, or their gear, or else disabling the Officer in charge of the boat, upon whom the whole attack depends. I do not think any Officer in charge of a torpedo-boat will in the day-time remain in the conning-tower, and at night-time it seems to me an utter impossibility to conduct an attack from that position. Therefore I think that the machine-guns have decidedly their day and also that it is a great mistake to suppose that the inch gun in the Service is not sufficiently powerful. I think that the damage that might be done to the boat does not depend upon the power of the gun, but upon the number of shots that can be fired. I also think the system of above-deck torpedo-tubes intensifies the effect of the machine-gun, because these tubes can be easily damaged by the inch bullet, and I can quite imagine that the inch gun will hail with the greatest pleasure the introduction of a boat armed in that way. I also do not understand what is the benefit of having two or three conning-towers, because supposing the Officer in charge being in the foremost conning-tower when the boat has pushed up to within 600 yards of the ship (which is not even then the firing range), if the conning-tower gets damaged, or by any other cause he has to leave the foremost conning-tower and proceed to the after one, what will have happened to his boat in the meantime? And then if you are to have Officers in each of the conning-towers, I do not know how you are to insure their having precisely the same ideas.

Captain HALL: I propose to touch upon two points in this paper, viz., the effects of torpedoes and the defence of ships against attack by them. I myself witnessed the experiment that Commander Gallwey referred to, which was carried out in Sweden. The target was intended to represent as nearly as possible the section of the "Hercules," the "Hercules" representing at that time and I believe still, as far as her bottom is concerned, the strongest ship yet built in the British Navy. It was a very admirable criterion of what would happen against the bottom of any ship then built, and the experiment to those who were present was most instructive and very alarming. The submarine mine charged with 33 lbs. of dynamite was exploded 4 feet from the bottom and blew a hole in the inner skin 76 square feet in

area. The Officers who carried out the experiment were unanimously of opinion that there was not a single ship then afloat that would have withstood the charge of that torpedo. I do not think we have advanced very much since then in the defence given by the ship's bottom, and I think in discussing this question of torpedo attack we are rather apt to lose sight of one fact, viz., that we have a large number of ships afloat which cannot be altered structurally—we must make the best of them, and what we want is some system of defence which can be applied outside these ships to enable them to be safe from torpedoes. With regard to ships in the future, we can consider any question of construction, but for ships which are built it is quite out of the question to talk about structural alterations because they cannot be carried out. The other point is the question of the defence. I think anybody who proposed some system which after trial proved to be a good defence against torpedoes would be a national benefactor. I entirely agree with Captain Colomb in the hope that our ships in the future will occupy the position they always did in the past in war time, that is, off the enemy's ports and not off our own. Of course in such cases they will be subject to torpedo attack, and having regard to the large number of torpedo-boats provided by foreign Governments I look upon it as a point of vital necessity that we should at once set to work and devise some satisfactory means of torpedo defence to be applied to the ships which we already have afloat. A defence consisting of torpedo-boats, catchers, picket-boats, or whatever you like to call these guard-boats, is something, but I think people who have studied the subject recognize that it is quite reasonable to suppose that if these guard-boats surrounding a fleet are attacked by a large number of torpedo-boats, some of the torpedo-boats will succeed in getting in, and then if you have no means of defence attached to the ship herself she will certainly be helpless; she will be entirely dependent upon her own manœuvring power, which will be nothing as compared to that of the torpedo-boat. I am afraid that unless some satisfactory means can be devised for defending ships which can be attached to the ship herself we shall come off badly in any future warfare with a naval Power which is able to bring against us a large number of torpedo-boats.

Admiral GORE-JONES: I rather regret that whilst the lecturer has introduced to us so many new friends he seems to have forgotton or rather to have underrated some of our old friends, and more especially the spar torpedo. When I was in America I was present at numerous experiments with this weapon, and I will content myself with recounting two of them in order to show its value. On one occasion a large hulk of 200 tons was towed out to sea and left floating; we came up in the "Intrepid" (one of the two torpedo-boats the American Government had specially made) at 6 knots an hour, and coming exactly alongside touching the vessel, we exploded the torpedo. We were touching at the time. It was a splendid experiment. The ship lifted up as if she were going right above us and then she tumbled back in *two* pieces. There was a most perfect example of what the spar torpedo could do. We then turned round, ran the ram into her and she disappeared altogether. On the next occasion Admiral Porter was on board and the Senate and all the great people of America were present. In that case also a vessel of about 200 tons was allowed to float away, and we came up to her with Admiral Porter's torpedo-boat. It had a great gun in the very eyes of it and the torpedo underneath. As we approached he fired off the gun and then under the smoke of the gun he came right into the stern of the other vessel and exploded the torpedo. The result was there was not as much left of her as would make a lucifer match. There were two experiments where mind was brought to bear and consequently the explosion took effect upon the *exact* spot. Now you take one of these locomotive torpedoes; they are of great merit, but you fire under the water and do not know where they are going. I recollect in the old "Excellent" we used to try and make a shot turn round a corner, but I never saw any advantage in it. These torpedoes go under water; no doubt there is a certain amount of accuracy when everything is done as it is done in practice, but if you come to try it in war with two ships at sea I doubt if that practice would be anything like as perfect as it is at present. One word about mines. There is a great moral effect in mines which has not been considered. I believe myself in nine cases out of ten if you filled your mine with sand the effect would be about the same, nobody would be a

bit the wiser except yourself, and that was actually done by a German mayor or person in charge during their war. It may not be in the recollection of a great many that thirty-three or thirty-four vessels belonging to the Federals in the war were destroyed by the Confederate mines, and this had a very marked effect on the war, the Federal Navy were quite afraid to take their ships up the rivers. That was, however, under circumstances perhaps more unfavourable to the attack, in a civil war in an enemy's country. I think there are a vast number of our ships as now constructed that would be of very great service to us in case of war, if they were armed simply with the outrigger torpedo, and then we should have the common sense, boldness, and dash of the naval Officer to explode them instead of chance.

Admiral BOYS: Having been connected with this subject for several years I may perhaps be allowed to say a word. I am very glad to hear from our lecturer of the progress that has been made in the improvement of the Whitehead torpedo and in the efficiency of the boats and vessels that are to use it, but I must disagree with him and also with my friend Captain Colomb on one point as to which they have expressed a very strong opinion. I think there is still a place in naval warfare for the outrigger or spar torpedo. I do not mean to put it in comparison with the Whitehead, but if I did so I should not make such a difference as Captain Jackson did just now, and liken it to the bow and arrow; I should rather say it was a revolver as compared with a breech-loading rifle. There are many occasions for instance in close harbours among crowded shipping and narrow rivers where an outrigger would be more applicable than a Whitehead; and then again as to the expense, the Whitehead and Whitehead torpedo-boats are costly constructions; the outrigger is a simple contrivance that can be rigged up in a dingy or other small boat, and could go to places where it would be scarcely worth while to risk expending a Whitehead torpedo or torpedo-boat, the supply of which is very limited. I therefore think the outrigger torpedo and the instruction in the use of it in our Service should still be continued. With regard to the Whitehead the lecturer has told us that it is now a very simple weapon and wants but little attention. My experience of it was that it was a very complicated weapon and required the greatest attention; in fact one Officer in our Service expressed it I think as well as it could be expressed, that to make the Whitehead torpedo a success and keep it in complete order you must love it, you must always be at it, inspecting it and cleaning it, &c.; it must not have the least detail or particle out of order. If one has been discharged for an experiment or practice you must put that torpedo away and take another for service. But, however, Commander Gallwey tells us to-day the employment of phosphor-bronze has removed a very great deal of that, and I can only say I am very glad to hear it. The point of the lecture comes when we are asked, will the torpedo supersede the gun and ram or either of them? In my opinion it will not supersede either of them; there is room for them all and they are all good in their own province. I believe that even for the defence of harbours you must have torpedo-boats, and submarine mines, and vessels carrying guns. As to guns, look at the range of the torpedo, which Commander Gallwey tells us is limited to 300 yards. Ships passing each other at 10 or 12 or 15 knots will be but a very few seconds within the range of that torpedo, and not only that, it will be the duty of Officers commanding ships and fleets to manœuvre if possible so as to keep outside the range of torpedoes and then the gun will come into play. I think the torpedo has put more upon the gun than ever it had before, and although Captain Jackson has said he thinks all the gun is fit for, is to make smoke to cover torpedo attacks, I do not see that things are very different now from what they were in the days of our fathers, when all was decided by the gun. I believe that the turning point in naval battles will be decided by the gun, although more complete destruction may be done by the ram and torpedo. I have not seen that drawing of a torpedo-boat before, but I think in spite of what Lieutenant Sleeman has said, that it will be the most efficient description of torpedo-boat that has yet been devised.

Captain FITZGERALD: Commander Gallwey has suggested that the torpedo is going to revolutionize ironclad building, and I understand that Captain Colomb seemed to back up the notion that England must depend for her supremacy of the sea upon torpedoes. Now, I cannot for one moment accept that conclusion. I

think the first thing that we have to consider is what is the principal duty of the British Navy, is it to defend our coasts, or is it to defend our commerce? I should say the latter principally. I believe the torpedo will prevent blockading. We shall not be able to lie off the enemy's coast as we did in the old war, we shall have to keep at a respectful distance. It will be perfectly impossible for any fleet of ironclads to lie within a distance at which torpedo-boats could be brought out against them. Then the question arises, is the torpedo-boat going to protect our commerce? I do not think it will. We must have ironclad cruizers more than ever we had. It is not necessary, in order to destroy England, to blockade her coasts, or to land a single soldier on her shore; it is quite sufficient to cut off her food supply. Any terms of peace that an enemy wishes to dictate will be simply got by keeping hundreds of miles away from our coast and cutting off our supplies if they are strong enough to do so. It seems a very remarkable thing, but we must have a fleet of sea-going ironclads which will protect our trade and commerce, otherwise in case of war we should be starved out in a few months. That is perfectly plain. Nobody would be such a fool as to expose his ironclads to destruction off our coasts when he has nothing to do but to send out cruizers and cut off our food supply. That is the mode of attack which will be brought to bear against England: not to go round our coasts and attack our towns, the torpedo will keep them from doing that. Commander Gallwey made one remark with which I do concur, because it is an undoubted fact, but it ought not to be a fact. He said that an Officer who is going to ram will use a weapon for the first time, a weapon with which he has had no practice in time of peace. I do not see why that should be so: it ought not to be so. I will not enlarge on that subject now, because I had the honour of reading a paper at this Institution upon it not long ago; but I cannot for the life of me see why we should not practise ramming in properly protected gunboats. There is a vast amount of useful information to be got by it I am certain. I do not suppose for one moment you can absolutely, and on a proper scale, imitate what an ironclad would do, but you can do a great deal by making small vessels unhandy, and making them represent in some degree an ironclad's behaviour. It would have just the same relation as boxing has to fighting, and I cannot insist too strongly upon it. I shall air my hobby on every possible occasion. I say it bears the same relation that boxing does to fighting, and I am sure no fellow would have much chance fighting with his fists who had not had a round or two with the gloves first. With regard to the defence of the torpedo-boats against the torpedo-boat catchers, I do not quite understand whether the first-class torpedo-boat is to carry any machine-guns. I should say they ought all to carry one or two, because it appears to me these light skirmishers of the fleet will be likely to meet and have a bit of a fight on their own account. They will not be able to use their torpedoes against each other on account of their light draught of water. It will have to be guns or rifles. There is one passage in the lecture which appears to me to be more important than any other, viz., "one thing is certain, that the efficiency of a torpedo-boat mainly depends on the amount of practice and experience the crew have had in her. A nation with no boats to practise with in time of peace will find but little value in the few she may hurriedly get together in time of war." I should like to see that printed in large letters and stuck up all over the country. We are expending hundreds of thousands of pounds on these expensive machines, and we have not got anybody to use them. They are most complicated weapons; not only the torpedoes, but the boats themselves. Those four or five Lieutenants who made such a successful attack under your Royal Highness at Portland were, as Commander Gallwey says, experienced Officers, but they would not be available in war time. Anybody, a Sub-Lieutenant or a gunner, would be told to go away and attack the enemy. It is a thing that requires immense practice. I have never been on a torpedo-boat, but I am told that if you put the engines on to full speed she jumps from under you like a horse, and it requires a great deal of practice to be able to sit her, let alone work her. Finally, I should say the Channel and Mediterranean squadrons should have attached to them their proper proportion of torpedo-boats, catchers, and light, swift, observation vessels. It appears to me that a squadron conducted on the principle of our present ironclad squadrons simply by themselves, exercising with masts and sails, shifting topsails and those kinds of exercises, does not represent the real study of the

science of the art of war. A squadron of ironclads alone no more represents a fighting fleet than a large mass of heavy cavalry would represent an army without artillery, infantry, engineers, telegraph corps, commissariat, and the other branches which are absolutely necessary to it. I cannot understand the principle of going on exercising in the way we do, it seems to me sheer waste of time.

Lieutenant-Colonel HOPE: I should not have ventured to speak had it not been for the slightly disrespectful terms in which Captain Jackson spoke of guns. I come here to learn and not to speak. I was very much gratified to hear Captain Colomb state that in his opinion the true defence against torpedo-boats, at all events in the day-time, was guns, and I may mention that I hope to produce a gun in June next (suggested by Captain FitzGerald's paper the other day), only a 2½-inch pop-gun, which will hit a torpedo-boat 5 or 6 miles off; and, farther, that the War Office have asked me to make a 21-ton gun which will do something more than make smoke. The theoretical penetrating energy will be about 60 per cent. in excess of that of the 110-ton Armstrong, the weight being 21 tons.

Major ARMSTRONG, R.E: I do not think anybody could be more deeply sensible of the necessity of being amply provided with torpedo-boats than those who have charge of submarine mines. In many cases a submarine mine defence without the co-operation of guard-boats and torpedo-boats would be very weak indeed. In fact, as has already been said, in almost all cases these two classes of defence should be considered as supplementary to each other, neither being complete by itself. The special *rôle* of submarine mines in a scheme of harbour defence having been clearly indicated by other speakers, I feel it would be unwise for me to add anything which should by any possibility be taken as an argument against the provision of torpedo-boats; there is only one point which has not been touched by the other speakers, viz., cost. The cost of a first-class torpedo-boat is about 12,000*l*. Now, in many of our harbours for that sum of money you could provide a very reasonable submarine mine defence. To lock up the whole of our defence in one boat which a chance shot may get rid of would, I think, be rather a bad arrangement. I will not take up any more of the meeting's time at this late hour except to say that as regards the comments just made on Captain Jackson's remarks on artillery fire, it occurs to me that those remarks were not intended to apply to the effects of artillery fire from shore batteries, but rather to the inaccuracy to which fire from ships is liable.

Commander GALLWEY: I may as well begin my reply by an apology, for I have not been accustomed to reply at such large meetings, or to meet with so many criticisms, as where I have been used to lecture I have had the say all on one side, so that you must excuse me if I do not answer all the points that have been raised. Sir G. Elliot said he failed to see how the torpedo-catchers could fail to be hit by the torpedoes themselves; but, of course, one object of building the boats of such shallow draught was that the torpedoes would most likely pass under them. It is extremely difficult to make the torpedo run near the surface. Besides, even if she drew the fire instead of the ironclad getting it she would have done something. Still I think with the boat going at 19 knots and presenting such a very short target, you would not have the slightest chance of hitting her with a torpedo.

Admiral ELLIOT: How about the machine-guns? They both carry machine-guns.

Commander GALLWEY: Of course, and the larger the boat the bigger machine-guns she can carry. I understand that this boat (the French) has eight Hotchkiss guns and two 10-centimetre guns, so that she is enormously more powerful in this respect than an ordinary torpedo-boat. With regard to external defences, such as nets, what I tried to convey in my paper was that they are most necessary, as no amount of boats, and no amount of precautions you can take, will invariably defend you from torpedoes worked by resolute men. They could come in with this little 9 foot 6 inch torpedo in a boat that it would be almost impossible to see, and we hear of submarine boats coming forward, although we have not got them at present. As has been said, we cannot alter the construction of our present ships, therefore the only way is to get the best means we possibly can for defending those we have, and I think in a great measure that this can be done by having properly constructed boats to hunt out and search for others. I believe in great manœuvring power for

these boats more than speed. I am not speaking from theory only, but practice has proved it. In the Russian manœuvres last year the Officers said "that the torpedo-boats were of little use as guard-boats, because of their bad manœuvring power," and it is for this reason that we advocate the use of these turn-about boats. I think the great difficulty with these guard-boats will be to prevent a dashing Officer from going too far from his fleet; they ought to encircle the fleet and keep near it. As Captain Colomb says, the cheapness of the weapons is our great danger. No doubt that is the great danger to our large fleet, that any nation can buy a torpedo for 200*l.* that will run perfectly well, and they can buy a very good boat very cheaply. How are you going to defend yourself? Surely not by the same weapon, It seems to me to be the same thing as with these dynamiters: any fellow can get a small quantity of dynamite and go and blow down the largest building, but you do not put a bit of dynamite out to catch him; you put on more police, and that is what we want these boats for. Of course, whether machine-guns are reliable or not is an open question. They have never been tried properly. I only know of one occasion in which they have been tried in actual war. I hear from an Officer out in the River Min that a boat approached the French fleet in the night—whether it was a torpedo-boat or not I do not know—but the electric lights were turned on to her, and the whole of the Hotchkiss guns in four ships were brought to bear on her, yet in the end they had to send two steam pinnaces to bring her alongside, and then they found she was not even hit. I believe that this is a fact, and possibly there may be some Officer here who was present at the time who can corroborate what I say. With reference to the "Huascar" and the "Cochrane," of course, as Captain Colomb says, if the Chilians had sunk the "Huascar" with torpedoes, they would not have been able to capture and use her afterwards; but if the "Huascar" had had torpedoes I doubt if she would have been captured at all, as it would have been impossible for the other two ships to have approached her so close as they did in order to compel her surrender by means of gun-fire. No doubt the "Polyphemus" is the most uncomfortable ship at sea that it is possible to imagine, but she is an extreme experiment. Get the result you wish to arrive at first, and simplify and improve afterwards. That is what they did with the Whitehead: they first got it to go at a tremendous speed, and they got at the same time a very complicated weapon; but now we are simplifying and improving it, and I think you will do the same with the next "Polyphemus." But I must own I think the torpedo-ram of the future will be a cross between the "Polyphemus" and one of these large boats, something rather smaller and less expensive than the "Polyphemus." As to Captain Curtis's remarks, I am afraid we have had no experiments as to the molecular action of the water on torpedoes as yet. Captain Jackson speaks of the outrigger torpedoes, and he calls them bows and arrows. As he says, no doubt if we have only bows and arrows we must use them, but if you have a weapon that goes 200 yards, or even one that goes 50 yards, it seems to me it must be better than a weapon that projects only 30 feet. I can clearly understand that, as Captain Jackson says, one great object of mines in defending a port is to delay the enemy under fire; but there are many harbours where we have neither forts, torpedoes, nor torpedo-boats, so that we have to begin somewhere, and I think you had much better begin with the torpedo-boat. A mine is useless without a fort, therefore before you lay down a submarine mine you must build a fort. I could not quite understand Lieutenant Sleeman's remarks about the range. The range I put as a reliable one for a torpedo was 300 yards. As at this distance the margin of error which may be allowed in estimating the speed of the enemy is 3½ knots each way, and I think that we are able to judge of speed between these limits, that is why I put the range at 300 yards. I put it at 400 when firing at a stationary ship, in which case you have not to allow for that error. I think, however, the range is in some cases very much longer than 300 yards, as the range depends in a very great measure upon the practice of the Officers using the torpedo. Of course, as to the absolute certainty—that you get the intelligence of the man up to the moment of striking the ship with the outrigger, I cannot see that—I think his intelligence won't stand him in much stead against a 1-inch gun. And as to this boat, Diagram (8), no man in his senses would think of hopping out of one conning-tower into another, as supposed to be the case by Lieutenant

Sleeman; but if you have an Officer in each conning-tower I say she has a double chance of getting near her object, because if one Officer is killed you have the other to go on. Admiral Boys refers to expense. Expense should surely never be taken into consideration. However small the object to be gained, if there is one man's life to be saved by it or the chance of doing your work with more certainty, we cannot enter into the difference of expense between the outrigger and Whitehead torpedo. Blockading now-a-days will mean keeping at a very respectful distance. You have heard no doubt how the German Government telegraphed to Wilhelmshavn the other day: "A squadron in the North Sea is coming down to attack you: defend yourselves." Down comes the squadron. It was a rainy blowing night. The fleet lay off some distance, and the Commander of it said "they cannot come out on a night like this, it is too bad weather for them. We will lay off a respectful distance and have a night in as we shall be up three nights." That night all the torpedo-boats were in the middle of the fleet. I never intended to say we must not have ironclads. We must have sea-going ironclads, and we must protect our commerce. I only wish to point out very strongly that unless you have something that will stop these torpedo-boats, you may very soon after war is declared, have neither ironclads, commerce, nor anything else. Of course, we cannot put Lieutenants in each of our boats, it is impossible, you have not got them. You will have to put in all sorts of people, and unless they have been previously trained, I fear they will be very little good.

H.R.H. the DUKE of EDINBURGH: Without making any further remarks I will ask you to join in a vote of thanks to Commander Gallwey for his very instructive lecture.

Friday, March 13, 1885.

COLONEL SIR CHARLES H. NUGENT, K.C.B., R.E. (retired), Member of Council, in the Chair.

ON THE CAPABILITIES OF PRIVATE FIRMS TO MANUFACTURE HEAVY ORDNANCE FOR HER MAJESTY'S SERVICE.

By W. ANDERSON, Esq., M.I.C.E.

BEFORE discussing the capabilities of private manufacturers of supplying ordnance for the public service, it is well to look back some thirty years and note how great a change has taken place in all that concerns the preparation of the material of war.

During the Crimean struggle I was serving my apprenticeship with Messrs. W. Fairbairn and Sons, of Manchester, and on the requisition of the Government we undertook the manufacture of a number of mortars, of what were then thought very large calibre. Not a single special tool had to be added for this work, our ordinary foundry and boring mills proving quite adequate for the undertaking. Had the Government wanted a thousand of the heaviest guns then in use there were dozens of firms among whom the order could have been distributed, and who would have executed it in a very few months. There was no question as to the pattern of the guns, or of the proper material to cast them of, and no responsibility was incurred heavier than that which all manufacturers of machinery have to submit to.

The change from cast to wrought iron, the introduction of rifling, and the rapidly increasing dimensions of ordnance completely altered the condition of things. The foundry capable of pouring castings of any weight was no longer available, and special machines became necessary to manufacture the coils, to rifle and temper the guns, and as the dimensions of ordnance grew more and more considerable, the difficulties of production increased.

The subject of this paper will be best considered under the following heads:—

1. The possibility of obtaining heavy ordnance from private firms when the general conditions of calibre, rifling, powder charge, and muzzle velocity alone are prescribed, leaving the details of design to be submitted by the competitors.

2. The possibility of obtaining heavy ordnance made to a prescribed pattern.

3. The possibility of obtaining portions of heavy ordnance to be put together and finished in a Royal arsenal.

The examination of the three modes of supply above enumerated must be undertaken under the supposition that it is very unlikely that any Ministry would ever give so large an order for guns that it would be worth the while of a private manufacturer to lay out the capital necessary to adapt his works to the special requirements of the contract. It is certain that so long as progress in artillery is as rapid as it has been of late, no very large orders will be given, and besides it is doubtful whether Parliament would vote sufficient sums of money, unless under the influence of panic.

With respect to the first proposal, we are at present limited to two private firms, that of Sir Joseph Whitworth and Sir William Armstrong and Company. Both these establishments are quite competent to manufacture guns without being furnished with a definite design, but merely guaranteed to take the Service ammunition, and to give a definite result.

But the business which one of the firms, at any rate, has created, has not been in supplying the British Government, and the other, though much more intimately bound up with our national workshops, has a more important foreign connexion, and it is therefore doubtful whether they would give very material aid in the event of a hurried demand in time of peace. The two famous factories I have mentioned are both self-contained, or very soon will be so, manufacturing their produce in all its stages entirely themselves. No doubt in time of war, pressure could be brought to bear by which the whole energy of the two large establishments could be concentrated for the national Service; but such proceedings would certainly prove very costly to the country, and would only be applied when too late to make good disaster.

The adoption of this system would also involve a certain amount of inconvenience in the diversity of patterns in the guns and fittings, especially in the gun-carriages, which I suppose will be furnished with the guns.

This method would be analogous to that adopted by the Admiralty in the matter of marine engines. From long experience certain proportions and details are known to be best, consequently general specifications are framed according to which a certain number of selected manufacturers submit their designs and estimates. The plan works extremely well, and gives the Admiralty the benefit of the wide experience and knowledge of private individuals; the consequence is that complaints about the engines of our war-ships are very rare.

2. The possibility of obtaining ordnance made to a prescribed pattern and in a prescribed manner.

The two large firms I have mentioned could, of course, furnish guns of the Government pattern, and made in the manner they may see fit to prescribe, provided always that they were satisfied with the sufficiency of the design. It will be imperative, in such cases, to rest the whole of the responsibility of the result on the shoulders of the manufacturers, because it will be impossible to determine, in the event of failure, at whose door the responsibility should rest. At the present moment, unfortunately, our Ordnance Department is not in a

condition to issue designs upon which manufacturers would be inclined to stake their money and their reputation, and I doubt very much whether any one could be got to subscribe to the conditions which would have to be imposed. This is one of the evils of the very limited competition that has existed in the manufacture of big guns; practically there has been no competition at all; and it is hardly too much to say that the efforts of inventors outside the Royal Arsenal, and of the great firm which works in connection with it, have been more than discouraged: witness the fate that has so far befallen Longridge's wire gun. No doubt every Government Department is besieged with proposals by inventors, and it would be impossible to try all, yet private firms are in the same predicament, but their superiority to a Government Department lies in this, that their wits, sharpened by self-interest, lead them to reject impracticable suggestions, while they select and adopt those that are useful and profitable. As the case now stands with us, instead of getting a number of interested minds to work on the construction of guns, the important problem has been left practically in the hands of a Government Department, administered with great, indeed ruinous, parsimony.

The main difficulties in the way of private enterprise are:—

1. The special tools required.
2. Favourable positions for transport.
3. Available proving ground.

The execution of orders for heavy guns would rest between two classes of competitors:—those whose chief business lies in the manufacture of steel, and those who are anxious to secure employment for a large plant of machine tools.

The steel makers are, as a rule, located in large inland towns, such as Sheffield and Manchester; they would be able to produce the ingots required with but little addition to their present means, but the formidable machine tools necessary for finishing the work would, in most cases, involve a large expenditure of capital, and considerable extension of space. Thus the huge steam hammers or hydraulic forging presses that would be necessary would involve massive foundation and costly buildings. The ordinary lathes might perform a great deal of the turning work, but the immense boring and rifling machines would certainly necessitate extensive additions in any of our existing works.

In addition the plant required for oil-tempering masses of steel weighing some 40 tons, together with the tramways and cranes which would be indispensable, all point to an outlay which must be reckoned by hundreds of thousands of pounds, if any considerable number of large guns is to be turned out in a reasonable time.

Those, on the other hand, who would undertake the manufacture in order to employ their tools, would also find themselves under the necessity of making a large outlay. They would probably receive the steel forgings ready prepared for the turnery, but even the heaviest plant would go but a little way towards dealing with masses, the least of which is of considerable weight and dimensions. It is unlikely that room could be made for the boring and rifling

machines, each some 100 feet long, and a large expenditure on cranes and tramways would necessarily be required, to say nothing of the oil-tempering apparatus and the shrinking pits. In both cases these large additions of plant would be absolutely useless for any other purpose likely to claim the attention of the manufacturer.

Again, the large steel and iron works are not situated altogether advantageously for the transport of very heavy guns. It is true that by means of suitable carriages almost any weight can be moved by railway, but the process is costly, and there are not many harbours on our coasts with cranes of sufficient power to ship heavy masses; for, suppose the guns made, it would be necessary to deliver them either to the arsenals or fortifications round the coast, or to ship them at once to our Colonies.

Another difficulty which meets us is the proving ground. The land required for this purpose must be at a considerable distance from dwelling-houses, because the concussion caused by the discharge of large guns breaks the windows and causes a good deal of annoyance, so much so that it is doubtful whether any proving place could be established near a town without danger of an injunction from the Court of Chancery to stop a nuisance which would very surely be complained of by a large section of the inhabitants. Of course lonely places are to be found, but they would be at some distance away from the works, and would involve considerable outlay in the shape of railways, magazines, splinter-proofs and butts, and it is not likely that manufacturers would be disposed to burden themselves with the cost of such establishments on the chance of receiving, now and then, an order for a few large guns.

This difficulty might be got over by the proofs being carried out at the Government grounds, but that would involve great expense if faulty guns had to be returned to the place whence they came in order to be made good, and in any case would involve unnecessary carriage, landing risks, and charges.

3. The possibility of obtaining from private manufacturers portions of heavy ordnance to be put together and finished at the Royal Arsenal.

It appears to me that the best means of securing rapidly a supply of heavy guns lies in the method last to be considered.

There are many steel works in the country which would gladly undertake the casting, forging, and even finishing portions of guns, and certainly very many engineering establishments which would readily furnish all the parts, and would lay down plant in the shape of forging presses and powerful tools, not of a special nature, because these would also be available for the general purposes of their business when the Government work happened to fall off. Very few engineering establishments, the Royal Arsenal included, even now produce the large forgings or steel castings they require, and the practice of purchasing these articles, roughly turned and shaped for various engineering purposes, is quite common, the method of reducing the forgings to the proper form by means of cutting tools

being found in many instances more economical than by forging, and, in the case of steel products, the same reasons are supplemented by this, that the manufacturer is able to satisfy himself of the soundness of his work before he delivers it. To carry out such a system it will be necessary for the Government to define very exactly the quality of steel they wish to obtain, and that, in our present state of knowledge, will be readily done. The specification should be such that it could easily be satisfied with the materials procurable in this country, and should not aim at qualities which would restrict the area from which the supply could be drawn.

There is an impression abroad that the materials required in the manufacture of guns must be of exceptionally high quality in order to ensure safety. I believe this to be altogether a delusion. When we consider that excellent guns have been made of material so brittle as cast iron, for instance, that the cast-iron guns converted, on the late Sir William Palliser's method, into rifled cannon are probably doing more work now, without accident, than any other guns in the Service, it is evident that the one important condition to be observed is not so much the quality of the material as the proportions of guns, and their mode of construction, so as to ensure a sufficient factor of safety throughout their length. Up to this moment we are, unfortunately, in ignorance as to what the pressure of powder gases in the bore of guns is, and consequently our guns are necessarily designed in a tentative manner, or in accordance with some rules which have no rational foundation beyond the delusive indications of crusher gauges. As I have attempted to show in a recent lecture at the Society of Arts, we have the means, in the observation of recoil with the assistance of the Siébert velocimetre, of determining the pressures with considerable accuracy, and it will be our own fault if they are not very soon so determined, and the law ascertained according to which the pressures vary. The important question of the minimum factor of safety next arises. Civil engineers, and the Board of Trade, consider that for railway bridges and girders a minimum factor of four is necessary, although the materials employed are in a most favourable condition as to the direct action of the strains, and the comparative slowness with which the pressures are applied. Mechanical engineers have found that a factor of at least six is desirable for parts of machinery subject to sudden strains, such as the beams, piston rods, cranks, and other parts of steam engines, and in the smaller sizes the factor is more often eight. In the case of rails, the application of strains is very sudden. An engine running a mile per minute over sleepers placed 3 feet apart, the wheels pass over each space in the $\frac{1}{30}$ of a second, the load often amounts to 7 tons on a wheel, and the factor of safety is not more than three, yet even iron rails under such circumstances very rarely break, although the material is by no means of a very high quality, and the support of the ground is uneven. Again, the piston rods of locomotive engines will make 500 strokes per minute, or a stroke in $\frac{1}{8}$ of a second, the steam attains its full pressure in the cylinder in about $\frac{1}{20}$ of the stroke, so that the pressure comes on the piston in about $\frac{1}{160}$ part of a second, a speed

quite comparable with the velocity of discharge in cannon, yet we very rarely hear of piston rods breaking.

In steam boilers, again, which bear an analogy to guns in so far that they have to contend with heat as well as pressure, a factor of safety of five is considered low enough, and no one ever heard of a boiler designed of such strength throughout failing. It seems certain therefore that guns should be made with a factor of safety of not less than four, and means must be found to make this in the case of guns, as in other structures, hold throughout, and when that is accomplished there will be but little risk of failure.

There is a difficulty in calculating the actual strength of a gun, because the material is in a disadvantageous condition for receiving the pressure. The layers immediately surrounding the bore are strained severely before the impulse of the explosion reaches the outside, and it is more than likely that the strains travel through the metal like the pulses of sound or the undulations of water, and that consequently the elaborate formulæ which have been devised for determining the strength of guns are by no means trustworthy, and probably the simple rule that the strain per square inch on the material is found by dividing the product of the diameter of the bore and the pressure per square inch by twice the thickness of metal, is as correct as any more elaborate computation.

The upshot of all these considerations is that for a well-designed gun there is no need to specify steel of exceptionally high quality, and therefore difficult to manufacture. No doubt it is important for guns to be made as light as possible, consistently with safety, and in that view high qualities of steel should be sought, but still a balance between the ideal and the practical should be duly observed. There is one system, however, which for twenty years has met with characteristic neglect, which will enable the highest quality of steel to be employed with the least possible risk of hidden defects, and that is Longridge's system of coiling wire or ribbons of steel round the inner tubes. Steel in this form may be easily obtained with a tenacity of at least 80 tons per square inch, two and a half times more than can be looked for in mild steel in masses, and has the further advantage of being very easily and quickly applied, without the necessity of costly and bulky machinery, and with absolute certainty as to its tension. It is satisfactory to know that Longridge's system is, at last, being seriously entertained, and probably after the inventor has sunk, a ruined and disappointed man, into his grave, it will be recognized as the most sure, rapid, economical, and scientific method of building guns of every size.

The guns having been designed, the quality of materials specified, and standard gauges prepared by the Arsenal, tenders might be invited for the supply of the several parts of the largest guns, to be delivered in single pieces ready to be put together. An objection will be raised that inasmuch as the manufacturers cannot be made responsible for the finished guns, the degree of supervision required under such a system will be excessive and costly. The answer is that practically under existing arrangements, if the manu-

facture is carried on properly at the Arsenal, the supervision ought to exist, and in any event the extra cost of maintaining a staff at the manufacturer's works would be insignificant. There would be no difficulty in establishing laboratories for the analysis of the material, and for testing the tenacity of standard specimens, or, with the facility of communication which there now is, this might be done in the various Government establishments and private testing places which exist. The careful examination of the work passing under the tools, and the checking of the dimensions would not need a large staff, and is now practised in the case of gun-carriages made to Government patterns. The Russian War Department, for example, maintains a staff such as I have described at the Abouchoff Steel Works, where guns up to 16-inch bore and 80 tons weight are being made. Every single piece of a gun is perpetually being examined, specimens tested as often as possible, the diameter of the hoops gauged, and every means taken to ensure compliance with the strict requirements of the designs.

To render the proposed method of manufacture available for rapid production, the national arsenals must however not remain idle. The special tools and appliances which private firms would be unwilling to provide must be put down by the nation.

The arrangements for tempering in oil must be extended so as to be able to deal with the maximum rate of production which is ever likely to be reached, the arrangements for shrinking on rings, or coiling wire, must be provided, and an adequate number of the largest lathes, boring and rifling machines, with the attendant cranes, tramways, and buildings should be laid down, so that a great number of heavy guns could be in progress at the same time, and a testing ground with all necessary appliances would have to be provided. This would be a much more useful expenditure than the erection of costly steel producing, casting, and forging plant, because abundance of those exist or will arise in the country, and will be able to supply our utmost needs, while the real pinch will be in the big tools specially needed for gun manufacture. It should be remembered also that the tools take a long time to make: they require special buildings, special cranes, and cannot be put down in less than a year, and when laid down have but small capacity for turning out guns in any number, hence it is most desirable that no time should be lost in the matter.

The position, with respect to the carriages for heavy guns, is happily much more favourable, any number of powerful firms would be prepared to manufacture if the designs were placed in their hands, but at present gun-carriages for the Navy are made exclusively at the Royal Arsenal, or by the Elswick firm, and no one else is ever seriously invited to send in designs or estimates. It is difficult to explain why the Admiralty should not adopt the same plan that has proved so successful with marine engines, and invite limited competition; perhaps the constitution of "My Lords" is not favourable to such a course, but undoubtedly the nation is a sufferer, if not in quality, at any rate in the cost of the mountings which are being supplied. This is the more striking as no fixed pattern has been arrived at, but new methods of mounting are constantly tried, the designs always emana-

ting from the Tyne, and the execution of the orders naturally settling there also. The land service is not quite so exclusive.

Another consideration should not be lost sight of, and that is the desirability of establishing a second gun factory at some distance from the Royal Arsenal at Woolwich, so that in the event of a military disaster which would involve the destruction of what is at present our only arsenal, we should have another at a distance. This would perhaps be most suitably placed in one of the midland counties next the centre of the steel trade, where fuel and labour are cheaper than they are near London, and where abundance of the best workmen are to be had. If such an arrangement were made, it would be well also to try the experiment of conducting a purely manufacturing process in the same manner as private manufacturers have found, by long experience, to be most advantageous.

What man investing his capital and reputation in a particular manufacture would be insane enough to determine that his manager should be appointed only for five years, and should select him, moreover, not because he had passed his life in learning the business he is intended to administer, but because he had been employed successively in managing a public school, a cotton mill, had been chairman of a railway, or earned immortal honour as chairman of a Local Board? It is quite possible that an excellent manager might be obtained among men who have had no experience of the particular business they were about to control, but it is a thousand chances to one that, if such a man were appointed for five years only, he would not distinguish himself. Would it be thought reasonable to take a civilian, say, from the Inland Revenue Office, and set him to command an army in the field, give him the appointment for five years, and trust that by the time he has to go into action he will have learned something of his duties. Every one knows that the business of a soldier or sailor in high command takes a lifetime to learn, and I think I have a right to say authoritatively, that the business of a manufacturer of machinery or of guns requires an apprenticeship quite as extended.

I have heard it argued that, after all, the system is not so defective, because there is always the permanent staff of the Arsenal ready to teach the manager his duties. I know that I need not combat such an argument in this Institution, the days of nursing commanders are over, and every English Officer prides himself on knowing his duties, and cannot accept instruction from those over whom he is placed in command.

In olden days, when no great changes were made, no doubt the duties of an Arsenal might be carried out by an Officer of average ability, but it is when great and rapid changes are taking place, when the permanent subordinates are at fault, that a master mind is wanted, and I think it must be admitted that this is the predicament under which we are now placed.

The delicate question of salary of the superintendent of a gun factory necessarily arises, and if good men are to be attracted to the national Service their remuneration must bear some proportion to

that which private firms find it worth their while to pay, and this circumstance forms another reason for a complete severance of the manufacturing department from all other branches of the Service. It seems to me that under existing conditions the Government will not only fail to obtain good men, but will lose, and in point of fact have lost, some of their best servants, from the superior attractions which private firms are able to hold out.

The art of war has now very little to do with the manufacture of the implements of warfare. A General will not lead his troops the better because he could, if necessary, set about making the powder, or the small arms, or his siege guns; circumstances have so completely altered, that knowledge which was once invaluable, though still useful, is indispensable no longer. In olden days the Captain of a ship was supposed to be independent of dockyards or ports, and could refit himself to some extent in the open sea, or, if wrecked, could, with the aid of such artificers as he had on board, either repair his ship, or build a new one. Of what service would such knowledge be to a modern Captain? He has among his crew artizans that could repair small defects, but grave injuries would be quite beyond their means, and, besides, the facilities of communication, and the telegraph, would bring prompt aid where formerly it was unattainable. I have heard it argued that it is desirable that as many Officers as possible should become acquainted with the manufacture of military stores, in order that the knowledge might diffuse itself like leaven through the Services, but I have never been able to learn how that leaven worked, and it seems to me that the high appointments are very often made just before the Officers selected have to retire from the Service altogether, so that the knowledge which they do acquire at the expense of the nation remains locked in their own breasts, or is placed at the disposal of some private firm.

The system is actually a contrivance for educating a certain number of Officers of high rank to a business for which they have no particular aptitude, and which, when they have learned it, is useless to themselves and to the nation they are supposed to serve.

If posts of honour and emolument are required for distinguished Officers they can be made out of something less injurious to the nation than the management of the national workshops.

These workshops should be placed under the control of the ablest men that can be found, whose appointments would be permanent so long as the holders continued efficient, and whose salaries would be such as to attract the best men that can be had, and such men may frequently be found among the Officers of the scientific branches of the Service. It so happens that I have been intimately connected for the last twenty years with the great gun factory near St. Petersburg. Up to a very recent period these works were of the nature of a private enterprise subsidized by Government in a manner not altogether unknown among ourselves. Admiral Kolokoltzoff has just completed his twentieth year of service, and during that time has, on a regular and systematic plan, developed the resources of the place, and made it capable of executing the heaviest work. Our own Arsenal at

Woolwich, I regret to say, cannot be mentioned in the same breath with the Russian establishment. A quarter of a century ago they had the means of casting steel ingots of 40 tons weight by means of 2,000 crucibles. They adopted successively the Bessemer process, the Siemens-Martin furnace, crucible furnace on Siemens' system, and Whitworth's fluid compressed steel process. They have a 50-ton dead weight hammer, besides a number of smaller ones, a 35-ton steam crane, 50 feet high, for their tempering process, turneries commanded by 120-ton cranes, where the heaviest guns are turned out, and shipping arrangement for 150-ton weight. Two years ago I had the pleasure of examining a splendid specimen of work in the shape of a 16-inch 80-ton gun.

It is hardly necessary to mention what Germany and France can do. The Governments of those countries depend upon private firms for the supply of their ordnance. We all know how well Germany is served, and to France we are, ourselves, indebted for all that is good in our new breech-loaders. If it is fair to judge of a tree by its fruits, it would seem that the conclusion must be drawn that the co-operation of private firms with a strong Government department leads to the best results, and makes it all the more sad and disquieting to find ourselves lagging so far behind a country on which we are disposed, perhaps, to look down as not worth much notice in the matter of the manufacture of the material of war. The fruits of our system is,—that whereas the Abouchoff Works, twenty-five years ago, satisfied themselves that steel was the proper material for the manufacture of ordnance, and breech-loading the proper type, they settled the proper proportions, and they pursue the manufacture in exactly the same way now as they did then; while we, supposed to be the foremost nation in the world in metallurgical operations, have only just awakened to the fact that breech-loading is better than muzzle-loading and steel is better than iron, although Whitworth and others have been vainly dinning the fact into our ears, and although steel has almost superseded iron in the hands of private manufacturers. What is the reason of this? I believe in a great measure it arises from the fact that the heads of our workshops, of necessity, have no authority, no experience, and are timid of changes even when they cling to a large private firm of exceptional power and deserved distinction. Had Admiral Kolokoltzoff been appointed for five years only, I have no hesitation in saying that the Abouchoff gun factory would not be what it is now. It may be whispered, does the Admiral suffer from Committees? I believe he does, but he has this advantage over the heads of our Departments, that he is master of his work and not a mere temporary student, that his experience and proved knowledge are looked up to by the Committees, and therefore they are not called upon to do, what I believe no Committee ever can do, that is, direct a manufacture in all its details, make far-sighted plans, and meet the requirements of the business half way, leaving no one to overtake them in the race. We suffer also from another cause, our system of government, appealing as it does more and more every day to the ignorant and prejudiced classes, offers a strong temptation

to our representatives to raise the claptrap cry of economy, meaning by that a restriction of immediate expenditure, and wholly ignoring the statesmanlike and prudent course of avoiding foreign complications by constant preparedness for war on the largest scale. Each successive Ministry forms its budgets, not upon the known and admitted requirements of national safety, but upon the miserable plan of striving to spend less money than their predecessors. Were it possible, at the same time, to arrest the inventive genius of our own and foreign mechanics this would not be so serious, but such a course is impossible; terrible and costly implements of warfare are constantly being produced, foreign nations are adopting them eagerly, and even distancing us in the race of invention, while our rulers, in order to pander to popular ignorance, starve our Arsenals and leave us all in the background. In olden days, when wars lasted thirty years, there was plenty of time to prepare the most elaborate material then known, but now when a war can be begun and finished in less time than it takes to make a single 16-inch gun, it is surely madness to be niggardly in our preparations.

It is very disheartening to dwell on this topic, the tendency to trust to luck is so great, that it is vain to hope that any words uttered here will produce a practical impression, and yet the most short-sighted must see that the consciousness of being unprepared affects the foreign policy of this country, and makes us yield and cower in a manner to which we have been hitherto unaccustomed. A single disaster will naturally make a rush and a wild expenditure of money to attain that which ought to have been done leisurely in time of peace, and this will be the more deplorable because no amount of energy will then be competent to remedy the consequences of past neglect, because the element of time comes in with terrible significance. Short and swift are the operations of modern armies and fleets, slow and protracted are necessarily the processes by which guns and ammunition can be manufactured.

It is to be hoped that our rulers have at last definitely made up their minds as to the pattern of gun they intend to adopt, that there will be no more waiting till something better turns up, but that immediate and serious action will be taken to abolish the notorious deficiency of guns from which we suffer. I trust that I have shown how the Government, with comparatively small outlay, and in a reasonable time, can avail itself of our unrivalled means of production, and place in the hands of the gallant men to whom the safety and honour of the country is entrusted the means of meeting our enemies at every point. Recent events have shown that the pluck, the daring, and the skill of our troops and their leaders are as high as they ever were, but all these great qualities will be of no avail and lead to useless sacrifice unless our ships and our batteries are armed at least as well, both in the quality of the guns and in their number, as those to which they may be opposed.

Mr. CARBUTT, M.P.: Sir Charles Nugent and gentlemen, I did not know that I should be called upon so early as this in opening the debate, but I feel a very strong

interest in this subject. I have not only spoken in the House of Commons upon it, but I have also written several letters in the "Times" and "Pall Mall," advocating the views that have been supported by the gentleman who has read the paper. Before going into the mechanical question, I wish to join issue with him in this when he says,—"We suffer also from another cause, our system of government, appealing as it does more and more every day to the ignorant and prejudiced classes, offers a strong temptation to our representatives to raise the claptrap cry of economy, meaning by that restriction of immediate expenditure, and wholly ignoring the statesmanlike and prudent course of avoiding foreign complications by constant preparedness for war on the largest scale." My impression is this, that the working classes of this country are thoroughly in favour of the Government putting us in a proper position to defend not only our commerce in this country but our commerce all over the world; and when we remember that for every mile of territory in England we have 66 miles of territory abroad to defend, I feel sure that when the new Bill which we are now passing in the House of Commons comes into operation, the working classes will speak out strongly and say that the Government must spend money to protect our industries, or otherwise we shall be lost; nobody can remember the war between France and Prussia and the straits that Paris was put to when it was besieged, and they had to undergo so much suffering and delay to their trade and national disaster, without remembering that they were not prepared; therefore the English people will call upon our Government to prepare for such an emergency. My own impression is that our unpreparedness is not because the money has been wanting. At the present time the nation is urging the Government to spend money upon more ships. I am under the impression that the fault has laid in another quarter, namely, with the designers. At present we are the largest steel manufacturing nation in the world. We have taken the lead everywhere in steel manufacturing. We have our friend here Sir Henry Bessemer, who will go into the question of steel better than I can do, and he at any rate put us in the proud position of being the largest steel makers at the present time. France, Germany, Russia, and all other nations have had to follow in our wake in making steel, and therefore it does seem absurd that here we are the wealthiest nation in the world, we have the most to protect, and the only reason that we cannot get proper guns is because our designers will not give us right designs. It therefore becomes a question of the management of our national workshops. I said in my letter in the "Times" in December that we had not one single large steel breech-loading gun at the present time. I cannot quite make that remark now, because the other day on board the "Collingwood" we tried the first two steel guns that we have in this country that are breech-loaders and are ready to be brought into action at once. We cannot judge how far these guns will be of service. They have never been tested as to what plates they could fire through, and as to what is their maximum efficiency; and although they were to use 400 lbs. of powder in the firing, I find that when they were tried the other day, the largest charge used was 290 lbs. When that 290 lbs. of powder was put in, the 17th, 18th, 19th, and 20th shots, according to the report in the "Times," could not be fired because the charge jammed. I say it seems ridiculous at the present time that we should be here discussing as to whether we should get any steel guns. I fancy that my friend Mr. Anderson's paper will fall rather like a bomb-shell in this room, especially when he says that we have trusted a great deal to luck. We all remember the paper read by Colonel Maitland, who took great credit to himself because in the year 1882 he had designed a gun, and Colonel Maitland said we had had very good luck that we had not been forced into war to prove that we had not at present got any guns. According to him we have followed Germany as regards steel, and we have followed France as regards the design. My impression is that the man who follows, never leads, and the nation that follows, never leads. It is for England to lead, and I hope in the future we shall call upon our managers of gun works and mechanics to put us in such a position that we can say we are not following anybody. I have no objection to make use of all the experience that we can get from abroad, but do not let us remain here something like twenty years behind other nations. Russia has for twenty-five years been making steel guns. I think it is some fifteen or sixteen years ago since I made them their 50-ton hammer. Now at the present time we have not got a 50-ton hammer in England. The largest

that we have is a 25-ton, although the Woolwich people say that theirs is a 40-ton hammer, I know that it was only called a 25-ton at the time it was made. A good deal has been said upon this point, that our manufacturers have not kept pace with our requirements. My impression is if the Government will set their face against spending any more money at Woolwich and will tell the manufacturers of this country that they will look to them in future, the private manufacturers will provide the necessary plant. I know that at the present time many large works in Sheffield and other districts are spending a large amount of money to prepare for orders that the Government may determine to send them. It has been said in this paper that we ought to spend more money in Woolwich in putting up steel plant.

Mr. ANDERSON: I said "not to put up steel plant."

Mr. CARBUTT: I beg your pardon. My view is this. In the first place to put up steel plant would take several years, and after they have put it up, they will have the experience to gain that has been gained already by the manufacturers in Sheffield and other large towns in whose works there are large hammers. Of course gentlemen have read the Report issued by the American Board of Ordnance. I believe that no better book on the subject of ordnance has been published. Not only is the Report of the Board of Ordnance published and can be got in this country, but there was a paper read before the Naval Institute of America, giving every detail of all machines used in ordnance construction all over the world, and they have proved conclusively that we are certainly very much behind the age. In France they formerly went on the same system as we—they trusted entirely to Government manufacture, and, in consequence when the Prussian war broke out, they found themselves utterly unprovided. What have they done now? They have encouraged all manufacturers to put up machinery, so that at a moment's notice they can call upon them to place their factories at the Government's disposal in order to supply the necessary guns, and these French factories at the present time are buying machinery in this country for boring and turning in order that they may be prepared for war at a moment's notice. So that in addition to France being ahead of us in the supply of guns, she is prepared at a moment's notice to put all her manufactories on to produce war material. We in this country are not prepared, and I think—of course it may be a matter of opinion—that it is owing to the gentlemen who advise us at Woolwich, and that the whole system is wrong. That a gentleman should be appointed for five years to look after any manufacturing department, shows in the first place he must be dependent on all around him—on his foremen and others, and he very often relies upon a broken reed. Of course that is not the position in which we ought to be placed. Then again we are dependent at the present time upon a Committee of Ordnance, and they advise the gentlemen in charge at Woolwich as to every matter of detail. I do not know the composition of this Committee, but I am told that there is only one naval man upon it, and that for years there was not a single naval man upon it.

The CHAIRMAN: I must explain. There are two naval men. The vice-president is also a naval man. The composition of the Ordnance Committee is this: a military Officer is president; two civil engineers, one a past president, and the other the President of the Institution of Civil Engineers. The vice-president is a naval member—there are two naval members, one military engineer, and the other two or three are artillerymen. I might say also that the second secretary is a naval member, and the first secretary is an artilleryman.

Mr. CARBUTT: I am very glad to be put right. My contention, however, is this, that you have these civil engineers on—I know Sir Frederick Bramwell is on—I believe he is as clever a man as anybody could get, and Mr. Barlow also—and if you could induce Sir Frederick Bramwell to give the whole of his time to the gun question no doubt he would put you right; but in a Committee upon which a man can only serve or give one day a month or one day a fortnight he cannot possibly know everything that is going on, and he cannot concentrate his energies upon your manufacturing department. That is my object in alluding to the two gentlemen. I do not cast the slightest doubt upon their ability, but I say that unless a man can give his whole time and attention to a subject, depend upon it he never comes to the front. Then again to show you that the Committee is not satisfactory. What are we doing? We have constituted another Committee—a Committee which are both buyers and sellers, that is to say, you have made a Committee of Sir William

Armstrong, Mr. Noble, and someone representing Sir Joseph Whitworth, to settle what the guns shall be, who shall manufacture them, how they shall be made, and everything about them. Does not that show that the whole system is wrong? Of course I do not object to this Committee being appointed. I believe at the present time we are so badly off for guns that we must do everything we can to get hold of them, but it proves to my mind that the system upon which we have been working is wrong, and that in the future something like the system sketched by Mr. Anderson must be adopted. In the House of Commons if we want to find out anything we have to ask the Surveyor-General of Ordnance, and of course he would not know anything about it. I am not saying this in derogation, because I have the highest respect for him, but he has to apply to the heads of departments, and the result is that you always get an evasive answer and never a correct one. So that what I say is, if we are going to attempt to defend this country, do let us put someone in who shall be responsible and whom we can look to and say, "That gentleman is responsible for the defences of this country," and that he shall give his whole energy and his whole time to it. In reference to what they are doing abroad, I saw a man who came back from Krupp's yesterday, and he told me that they are now making a large quantity of 120-ton guns for Russia, and that they are putting down very large new plant. I am told that Armstrongs at the present time are ordering boring mills which will cost from 3,000*l.* to 4,000*l.*, and some of Krupp's are costing 9,000*l.* When we thus see what an amount of money is to be put into one tool, it shows us what a time it must take to finish the tool. The element of time comes in, and therefore it is all the more necessary that we should make up our minds what we should do, and have a proper system of manufacture. But it is no use having a proper system of manufacture unless you settle what kind of guns we are going to have. We have never yet settled what gun we are going to have. Sir Joseph Whitworth carried out some experiments some twenty-five years ago in which he settled some elemental facts which we ought to have followed. We have not followed them, but now we are gradually coming to them. First of all, everybody will remember how all our shot were guided by studs, and we spent a couple of millions in making guns for those shots, but now those shots are done away with. There are many other things still to be settled, such as the length of the shot and the rifling. I believe you are entirely wrong in your rifling, because you have that increasing twist which I believe is absolutely and mechanically false, because if you say that a shot shall be fired with its length five times its diameter in a big gun with an increasing twist, the head has to turn much quicker than the base, and either your shot must jam or get something like an uniform twist. That is a mechanical question that gun makers ought to know more about than I do, but we ought long since to have settled all these things as matters of fact by experiment. It is no use going on making guns that we have not tried. We have not tried the 43-ton guns, we have not tried the 63-ton guns, and we have not tried the 110-ton guns, all of which are being made upon the same plan. Look at the number of explosions that we have had. We had an explosion last November of a 6-inch gun on board the "Active," and to this day we cannot find out what caused it though a Committee have been sitting on the subject. They have tried all sorts of experiments, and yet when we asked in the House of Commons to know what the result of that Committee's labours has been, they cannot tell us. When I asked whether all the other guns had been made on the same system as these 6-inch guns, I was told that they have been strengthened a little bit. What one wants to know is whether the larger guns are being made on some system which has been tried, and of which we know the result. We asked the other day as to what the 43-ton had done, and we could only get what the calculated effect of that gun would be. They would not tell us what it was able to do.

Sir HENRY BESSEMER: It is with very great diffidence that I come forward to speak on this occasion, because I must state my opinion to be very strongly in favour of private manufacturers being allowed to produce all the raw material for heavy ordnance, and in some cases wholly finished guns, both for the Navy and the Army. I believe that is the only way in which we can rapidly get supplied, and can make up for the great deficiency that has been caused in our arsenals by making a series of guns that are practically valueless. I am the more inclined to state this, because it is now some eight or nine years since I had the smallest pecuniary interest either

in the production of a gun or in the manufacture of steel in any way whatever; therefore I am at least unbiassed by any personal interest in the matter, but I still have, as I have always had, a very deep personal interest in the production of guns. If you will allow me, I will refer to a point which may appear to you at first sight not germane to the question before us, but I think you will see that it leads up to one of the most important questions that has been touched upon in the paper by Mr. Anderson—that is, having reference to the nature of the materials and the quality of the article employed being judged of and determined exclusively by practical men who have passed a lifetime in acquiring that special knowledge of metallurgy without which they are unqualified to give a decision on such questions. In January, 1854, I commenced experiments on the manufacture of steel for guns. I made but little progress until December in the same year, but in the early part of January, 1856, I had so far succeeded that I deemed it most important that the results then obtained should be laid before our own Government. (I was working then under the kind patronage of the late Emperor Napoleon.) In order that our own Government should be kept informed, I went to Woolwich, and had an interview with the then Director of Gun Factories, Colonel Eardley Wilmot, afterwards General Wilmot. I explained to him my novel plan, which he said appeared theoretically so excellent that he should certainly believe it to be true, did it not seem too good possibly to be so, but, notwithstanding this apparent contradiction, he was quite willing to assist me in testing the new metal, and he called with me upon their very able chemist Mr., now Sir Frederick, Abel, who was at that time at the head of the Laboratory Department of the Arsenal. We had a long talk over the matter, and it resulted in Colonel Wilmot saying, "If you will bring from time to time the results of your experiments we will put them to a test here, and give you the result of that test." They did so, working with a will, and in a way that I have seldom found men do from disinterested motives, for it was almost an extraneous matter and beyond their duties to investigate a private matter of that kind, but they did it solely with the view of benefiting the Service in which they were employed. To be brief upon that point, I may tell you that I have in my possession now the result of some twenty-nine tests made upon my experimental materials in their proving machines. The results of those tests were so convincing to Colonel Wilmot that he said, "Well, now there is only one point beyond this testing for tensile strength that we wish to go to. I should like to see what would be the effect of sudden concussion on your material." I suggested for that purpose that I should make some short portions of gun tubes or cylinders that he could put when cold under the steam-hammer, and give them such a crashing blow as would double them up flat, and thus see whether they would crack or yield any more under this violence of concussion than they would under the gentler pull of the testing-machine. A number of cylinders were made of my mild soft metal, and four of them were tried in succession under the steam-hammer. All four stood these severe blows. I have here before you duplicates of the cylinders crushed in that way. You will see that the middle specimen is a gun tube of 6-inch bore and 2 inches in thickness, and is still in its normal condition; the second specimen, which was precisely similar, was simply put under their big steam-hammer at Woolwich, and it took two heavy blows to bring it down to the flattened condition of the specimen that you see before you. Next to it is a 16-inch diameter steel hoop, which was also placed upon edge and crushed down under the hammer into that long loop as you now see it. So that at this early date Colonel Wilmot was convinced that he had a material exceedingly tough and impossible to be burst in the way of short or sudden rupture, but that it could be stretched and torn if overstrained, and would yield only under excessive pressure. He was so convinced of the success we had then arrived at that I obtained the conditional assent of the authorities for the commencement of the manufacture of steel under my process at Woolwich. Indeed we have the further evidence afforded by a very elaborate speech made by Colonel Wilmot before the Institution of Civil Engineers on May 24th, 1859, in which he expresses his entire confidence in the success of the process and the applicability of this mild steel to the construction of ordnance. In accordance with that decision on the part of the Government I went down to Woolwich, selected a place in the factories where the Bessemer converting apparatus

could best be erected; I took the required measures for it, made all the plans necessary, estimated their cost, and presented that estimate in due form, which Colonel Wilmot said he should lay before the authorities; and we had no doubt it would have passed, because the cost of the converting apparatus was exceedingly small, and I may add that I gave a guarantee in that estimate that I would produce fluid steel at a cost not exceeding 6*l.* 12*s.* per ton at Woolwich, including material, carriage, labour, and everything pertaining to the production of the fluid steel fit for casting, and that the material so produced should have a tensile strength of at least 30 tons per square inch, being 5 tons more than the best Low Moor iron. I waited some time, expecting day by day to receive the confirmation of this contract, which after what had taken place was supposed to be a merely formal matter, but it did not come. I began to get impatient, and at last went down to the Arsenal, and then I found that Colonel Wilmot had been removed. I was then referred to ———. I saw him on the subject, and asked if the contract had been passed, and he said, "Well, I really don't know." Indeed he hardly knew anything about it. I was most anxious, not for the mere pecuniary advantage, but I wished to have the *prestige* of making by my process all the material for the gun factories at Woolwich, and also that my process should be tried on the large scale then proposed. I endeavoured to explain the great difference that existed between my plan of producing the material for guns and those which I knew had been under the consideration of the authorities, showing the excessive cheapness and the immense rapidity with which we could produce large quantities, for by the apparatus included in the contract they would be able to make at least three masses of 10 tons each per day, and therefore could have produced an amount of material equal to some half dozen of the largest iron coils per day. Having explained all this to the functionary with whom this important decision rested, almost as one would explain A B C to a child, I tried to impress upon that worthy gentleman something like an idea of the nature and value of the material, and its great superiority over what had been used before, but I utterly failed to make him appreciate it. He said, "I must consider this matter, and if you will call again in a week I will give you my decision." I then said to this official, "If you will ask Colonel Wilmot, the Superintendent of the Royal Gun Factories, what he has been doing for the last seven months in the way of experiments with this metal, if you will also ask Professor Abel in the Laboratory what proofs have been given at the proving machine, showing the tensile strength, bending, and all the other tests there made, and if you will ask also what the analysis is, showing how absolutely pure we can make malleable iron, and how we can ensure the temper or quality of any description of steel, they will, I think, give you all the satisfactory information you require." I hoped—indeed I felt assured—that the result of this investigation would be that I should get the contract signed. I went again, as desired, at the end of the week, in the full expectation that my contract would be accepted, and then his Lordship told me that he had consulted Sir William Armstrong, who told him that my material was utterly inapplicable to the manufacture of ordnance! That was the end of my six or seven months' trials and investigation of the matter at the Arsenal, and I had to simply walk out of Woolwich; and I must say that I was astonished to find that neither Colonel Wilmot nor Professor Abel had been asked a single question, and that a rival manufacturer should have been, above all others, selected to answer such a question, and that when the question was so asked the decision should have been given upon his dictum alone. I mention this fact, because I hope that such a thing may never happen again; and if it does never happen again, the disappointment it was to me will be as nothing compared with the good that will result from a state of things totally different to what has hitherto been the rule at Woolwich. What I should say in reference to this matter is very much what Mr. Anderson has said, that before any material for guns is delivered at Woolwich, and before the nature of and the mode in which it is to be made is determined, that that determination should never be arrived at by any person without technical knowledge, but by at least two experts in metallurgy and two eminent practical engineers rather than civil engineers, for these questions do not belong to the civil engineering department, and that these experts should be supplemented by such naval and military assistants as may be necessary to work in conjunction with

them. But it should be a *sine quâ non* that neither of the gentlemen forming such Committee should have the smallest shadow of interest either in the production of steel or in the production of guns.

Admiral R. V. HAMILTON: The lecturer in the commencement of his paper called attention to the admirable manner in which during the Crimean war mortars were made for the Government by the firm with which he was then engaged. It would be a very different thing at the present day, for if we now wanted to make rifled mortars we should have to follow in the suit of others: we have not got a steel rifled mortar, nor have we tried one; and if at the present moment we wanted to make a mortar we do not possess the data for the manufacture, which would take at least a year to obtain. Five or six years ago the Russians in Cronstadt laid down a model of the "Inflexible," and fired at it with a rifled mortar at 5,000 yards' range, and the hits were 17 per cent. The Germans at Meppen did the same thing. Now, although all this has been done by foreign Governments, up to the present moment we have never made an experiment with regard to rifled mortars! I attach very great importance to them. I believe at Sveaborg more was done with mortars than by anything else. Our whole efforts seem to have been to make rifled howitzers which are not of the slightest use to the Navy, while rifled mortars which are of use to the Navy have been utterly neglected. That is one point to which I should like to call attention. Mr. Anderson has also referred to the fact that private firms are much more ready to take up inventions than the Government firms are. That is not always the case, because very often their self-interest leads them to neglect inventions which may be very useful. Sir William Armstrong was an opponent to the introduction of breech-loading guns; he repeatedly said, "We do not want breech-loaders." My answer was, "I quite agree that we should have muzzle-loaders as long as possible, but when we cannot you must have breech-loaders." Mr. Anderson mentioned the difficulty with regard to transporting the guns from the works to the place where they could be proved. Now, Krupp proves his guns at Meppen, 70 miles from the manufactory at Essen. He has no difficulty in transporting them. At Meppen he has a ground worth going to see, where everything the skill and science of the age can provide is utilized to save manual labour. It makes one feel ashamed of one's country when one comes back from it, and goes to Shoeburyness and sees the wretched place we have there called a proving-ground. The only improvement they have carried out at Shoeburyness for the last twenty years is that they have put up a 100-ton sheer instead of the 50-ton sheer. They have no railways overhead, or ground for transporting purposes, and no mechanical appliances. The only wonder to me is how our admirably energetic staff at Shoeburyness can do the work they do with the most inadequate means provided for them. Another thing with regard to Shoeburyness is that we cannot get proper range-tables when charges are altered, for months. Now, our guns are of no use without ranges. It is eighteen months after some of our ships have been in commission, after charges have been increased, before they get their new ranges taken. At Alexandria the only ship with a proper range-table was the "Inflexible." Money is required to put Shoeburyness into a state fit for the requirements of both Services, for at the present moment it is not fit to supply the wants either of the Army or Navy. Then there is another thing to be remembered, and that is for two months in the summer time the ground is occupied by the Volunteers, and important experiments on which our naval construction depends are deferred. Mr. Anderson has made one statement that to me, as a naval Officer, is very alarming: that is, that "Up to this moment we are, unfortunately, in ignorance as to what the pressure of powder-gases in the bore of guns is, and consequently our guns are necessarily designed in a tentative manner, or in accordance with some rules which have no rational foundation beyond the delusive indications of crusher-gauges." I must say, I thought whatever might be the case with our guns practically, theoretically they were perfect; but if that statement be correct it is very certain that neither theoretically nor practically are we what we ought to be. He also alluded to Mr. Longridge's system, and stated that he hoped to see it in force. Now, I do not think Mr. Anderson goes in strongly for private manufacturers; but he has alluded to the Admiralty system of providing our engines in which everything is done most satisfactorily by private enterprise and energy, and if the Admiralty were to attempt to make their engines we should be in

as bad a state with regard to engines as we now are in regard to guns. Now, had Mr. Longridge, or anybody else, produced an invention relating to steam machinery as important as his, for the manufacture of guns, I am sure that invention would not have taken twenty years to come to the front. We may depend upon it some of the numerous engineering firms who supply our Government with engines would have taken any important invention up long ago, and have forced it upon the Government. With regard to our gun-carriages for the Navy, Woolwich has failed most completely, and if it had not been for the firm at Elswick we should not have at this moment anything higher than a 35-ton gun, and we should not have had the hydraulic loading gear. At the same time I quite agree that it is desirable that the manufacture of the carriage should be placed open to competition. We have now got Vavasseur's carriage, so that it shows that it was not quite altogether in the hands of Elswick. As soon as Elswick found out that we were determined to have Vavasseur's carriages—which were better than their own—they took the invention into partnership. At the same time, if we are to have a monopoly, and prefer Elswick to Woolwich, without Elswick I do not know where Woolwich would be. There can be no doubt that a man at the head of a Government establishment is in a different position to what he is in a private establishment. I very much doubt if Mr. Rendel does not wish himself back at Armstrong's, instead of being at the Admiralty, where he cannot move a step without going to the Treasury. I also doubt if Sir W. Armstrong's was a success in the gun factories, for the simple reason that he found himself so tied and hampered by the red tape that must exist in Government establishments. I do not think any benefit would be derived by adopting Mr. Anderson's plan of superintendence.

Mr. NORDENFELT: As I am a maker only of small guns I cannot be suspected of having any bias in the question of larger gun questions. The lecturer spoke about steel, "best steel" *versus* "steel good enough for guns." My feeling would be that for guns we should have the very best steel in the world, because the increase in cost of such steel is exceedingly slight as compared with the expense of the labour on the guns. Admiral Hamilton took up the question of the superintendence of gun factories, and I am quite against the lecturer, and quite for Admiral Hamilton on that point. It seems an absolute necessity for a gun factory that the superintendent —not the manager, as Mr. Anderson put it in the paper—should be a man who has fought guns in war, and has seen the work, and knows what is required—the mode of handling, and all points of that kind. He can have his next man, and he can have the very best engineers to do his detail work for him. The Captain of a ship does not work his own engines, or anything else, but the head must surely be a man who knows what is required in war. As to the five years' appointment, of course it comes sometimes very hard, both upon the superintendent and, perhaps, upon the nation. At the present moment we have a good man at Woolwich, and it will be very difficult to find a good successor to him, because there is no sufficiently large establishment out of which such a man can be taken. I am afraid Mr. Anderson's argument does not speak exactly in favour of what he really wishes, namely, that private manufacturers should do the work. If a superintendent of gun factories remains a very long time in office and afterwards advances to the next position of Director of Artillery, and perhaps Surveyor-General of Ordnance, the Service may be tied up to a narrow groove which may be most detrimental to the nation. Not a hundred years ago we have had two men who thrice contracted for years all ordnance questions, and it is now an acknowledged fact that their opinions caused the fatal delay in adopting breech-loading guns instead of muzzle-loaders, and steel instead of wrought iron, from which we are only now removing at great cost years after other nations are already provided with the more efficient modern guns. If a superintendent instead of being an Officer were a Mr. Jones, a civilian, and if he were staying there for twenty years, surely that would be a still more dangerous burden on the private factories, because Mr. Jones might have a predilection for Mr. Anderson, while he might hate me, and I would have no chance of getting in; whereas if there is a change every five years of the head, and if he (the superintendent) is not a steel maker, nor a man who looks after the lathes, then I think this must be in favour of the private manufacturers as well as of the country. As to private establishments we have two very large establishments, as Mr. Anderson

says, and these establishments are sometimes abused for taking large foreign orders. I think it is the best thing for this country that they do take large foreign orders. The result is, if the country gets to war and export of arms is forbidden, these establishments cannot export anything; they must work, and they will be only too glad to expend their whole energy and great experience in working for the nation. That they are willing to do such work there is no question, and that they have already done a great deal of good there is no doubt. But if more power is required than these two establishments possess, which may very likely be the case in war, we have a great number of other establishments who are so nearly ready to manufacture guns of any size that it only requires that they should be acknowledged by the Government. For instance, there is the firm of Firth and Vickers in Sheffield, who have for years made steel tubes for foreign Governments, and can make them of any dimensions for this country. Then there is the firm of Greenwood and Batley of Leeds, who have made those very large lathes and machines spoken of for foreign Governments, who have made, for instance, the whole establishments of Terni in Italy, for rifle manufacture, and who can to-morrow set a very large experienced staff on to gun-work. I mention these names because I have experience of their work; but there are doubtless others who may be equally useful. These and other firms like them dare not put up the tools required to do the work for the English Government because they have no support. If the Government were to issue gauges and dimensions they could set to work to-morrow, but they dare not provide tools and try it because of the yearly purchase system which is the most baneful thing of all. I think the superintendents of whom we spoke ought not to be taken out of a regiment of artillery directly, and the trained staff of assistants and younger Officers with special experience is too small; they ought to be chosen out of a class of Officers who have had special training by working for years at experimental establishments. We have in England no experimental establishments worthy of that name. In France they have, for instance, at Pavres sixteen Officers, who live at the ranges and spend all their time working at these experiments. To them ballistical science becomes a matter of A B C, and out of such a trained staff the superintendents should naturally be chosen, and, if so chosen, I think they would do all that is expected from them. You often hear short-sighted complaints of the expense of experiments, but they forget that 100,000*l.* spent in systematic experiments often save a million by preventing errors in choice of guns. I said that there is one very fatal point in organization with regard to ordnance. For Parliamentary reasons every purchase of ordnance is made for delivery within the financial year: nothing can be more unsatisfactory, because private manufacturers dare not put up machines and commence Government work which they cannot complete in the year. How do people do in other countries? Supposing 800 guns are wanted. France gives out tenders to different private establishments, and they keep on making the guns quietly and steadily in the course of two or three years, and deliver them as they can, and therefore at low prices, and then the Government gets the guns in a given time previously stipulated. But with the yearly purchase system no man would dare to put up large expensive machinery and throw over other work, knowing that after the 31st of March perhaps the order might be cancelled, and he might not get the next year's order. I do not believe subsidies are wanted, because in no other country is there such spirit of enterprise as amongst English manufacturers, but what is wanted is that the manufacturer shall know that for a certain time he will have a certain amount of work to do, and he will then find the money himself to do it. May I be allowed to make three suggestions in which I think I am backing up entirely Mr. Anderson's suggestions? The first is the creation of a really good experimental establishment comprising some thirty or forty Officers, and I believe that the expense of that would be very small compared with the benefits that would result. The second point is to change the yearly purchase system. I do not believe it is a necessary system, because when you buy a ship you spread the work over several years—so much to be done the first year, so much the second year, and so on, and I believe if that plan were applied to guns it would be a very great advantage. The third suggestion is, that after the patterns have been definitely settled by the new experimental establishment, a certain proportion of work should be given out to private firms with the view of spreading the orders as far as possible,

and then our manufacturers will place themselves in such a position that they will be ready—as they are now already willing—to help the country in any emergency. I am afraid I must admit the possibility of the English Army and Navy perhaps losing their first and second battles, but I do not believe in the notion of England being beaten in the end. They must fight on, but it will be a question whether they can win unless they can get help quickly enough to make ordnance in a short time, which if the manufacturers were not ready might not be completed until it may be too late.

Captain JACKSON: I may state as a matter of fact that the superintendents of the manufacturing departments are not taken at random from the Regiment of Artillery. It will be found if the names of the Officers, heads of the manufacturing departments, are considered that, as a rule, they have served in some other capacity connected with the departments of which they now are the chiefs. I think the Superintendent of the Gun Factories was formerly Assistant-Superintendent of Gun Factories, and the present Superintendent of the Royal Small Arms Factory was formerly in charge at Birmingham. So that though it may appear that their appointments are only for five years, they have, in subordinate positions connected with the same departments, previously served for some considerable time and learned a great deal of their work. The appointment for five years is a convenient arrangement for getting rid of a man at the end of five years; it does not by any means necessitate his being turned out. We all know in civil as well as naval and military establishments, it is very often a great advantage to get rid of a man quietly. On a certain railway on which I have been lately travelling every day up to town, I constantly observe the passengers growling at the wretched state of affairs, and they invariably say, "Oh, if only the company could get rid of old So-and-so, all would go well," this being the man at the head of affairs. If this manager had only been appointed for five years, they might have said good-bye to him at the end of such term, or they might have kept him on as was most convenient for the interest of the shareholders. Of course there is a great deal to be said from the point of view of the lecturer in favour of having a civilian at the head of a manufacturing establishment, who is really a practical engineer. I think, on the whole, I prefer the Russian plan, to have an Admiral there. I do not know that it would be wholly advisable to retain the services of one of our Admirals so long as twenty years. Perhaps he might be getting a little too old for his work, but still that is the right service from which to select men for the heads of a manufactory of naval guns. With regard to crusher-gauges, I do not know much about the present state of artillery experiments, but I should think we might rely upon crusher-gauges as affording a comparison of the pressures if not the actual pressure on the bore. Mr. Anderson spoke of the velocimetre. It has not been lost sight of at Woolwich and Shoeburyness. Experiments are being carried out, and no doubt we shall be able to get more trustworthy information concerning pressures in the bore than can be got by crusher-gauges.

Lieutenant-Colonel HOPE, R.E.: I rise to say a few words on the subject of the management of Woolwich Arsenal. I think it is pre-eminently unfair to take an artillery Officer and put him down into a workshop and tell him to make a punch that will punch a hole through a couple of feet of iron a mile off, in a moment of time. The Officer so long at the head of affairs alluded to by Mr. Nordenfelt certainly had no previously knowledge of such matters. No doubt to him is due in great measure the present position of our armament, but it is also due to the House of Commons. I regret exceedingly that Mr. Carbutt has been obliged to leave, because I should like to have called his attention to a petition to the House of Commons which I had the honour of signing along with Sir Henry Bessemer and other distinguished men five years ago, protesting against what was then termed the "Woolwich" gun and the Woolwich system. It was therein stated that "false information and wrong principles are officially disseminated and taught in both Services." That was signed by Sir Henry Bessemer, by the late Mr. Merrifield, and a number of distinguished men. I think it was the duty of the House of Commons to have granted the prayer of that petition, which simply amounted to a prayer for inquiry. It seems to me that it is a wrong principle altogether to entrust so important a matter as the manufacture of guns, on which the safety of our Navy depends, to any one man, whether

he be an artillery Officer, a civil engineer, or even an Admiral. I think first of all there ought to be a Commission appointed of the very first men of science in the country, Sir Henry Bessemer, Mr. Anderson, Sir William Thomson, and men of that stamp. There are many very important and many extremely difficult problems to solve in connection with gunnery, which involves metallurgy, chemistry, physics, and engineering, and is an extremely complicated problem. Instead of going to the root of the matter we assume that a gun must be built in a certain way. Formerly our guns were all made solid, and there were very remarkable instances of the endurance of even common cast-iron guns. I know myself of one—an old English 18-pr. gun of Sussex charcoal iron, cast in 1740—a very long gun. It was desired to burst that gun on a particular occasion, and a double charge of powder was put in and it was then loaded up to the muzzle with alternate round shot and grape, with sand put in the interstices to increase the friction, and finally a great wooden plug was driven into the muzzle. It was chokefull up to the muzzle. The charges of powder were not the slow-burning powder of the present day, but "L.G." quick-burning, violent powder. Instead of bursting, the gun simply jumped about 50 yards to the rear. If cast iron can stand a strain like that, it is quite clear it cannot be wrong to make guns in one solid piece. Then, again, there is the celebrated experiment of Sir Joseph Whitworth with a 2½-inch cylinder of homogeneous steel, which he has fifty times over fired with no outlet except one of one-tenth of an inch in diameter. It was filled chokefull of powder, and the only effect upon it has been to increase the diameter by 0·04 of an inch. Therefore, when we assume, as a matter of course, that guns must be cut up into little bits, it does not all follow that there is any engineering necessity for it; and such matters of that kind, it seems to me, require examination from a very much more scientific point of view than can be expected of any artillery Officer or even, as I said before, an Admiral.

Captain SCOTT, R.N.: I deny altogether that our nation is likely to be beaten in war. We have the best *personnel* in the world, and that goes a very long way. I quite agree we should do more in order to perfect our artillery and other matters, but as to our being beaten, I do not think we shall ever see the day.

The CHAIRMAN: Gentlemen, it may perhaps be advisable for me to say a few words now, though where doctors disagree, I do not know that what I may say is likely to lead to agreement. I understand that the lecturer really pins his faith to the third of his proposals—that he only set up the first two in order to dispose of them once for all, whereas the third—the possibility of obtaining heavy ordnance, to be put together and finished in the Royal Arsenal—is the one in which he believes, and to that I can only say "Amen." I believe that that is both best for the Navy and best for private manufacturers. In my opinion an arsenal is a *sine quâ non*. I am no partisan, but I believe a Government establishment is a necessity. It would not do to trust entirely to one or two large private firms instead of having a Government establishment, because the best and wealthiest of private firms do sometimes come to grief, and if a firm of this kind came to grief in the hour of need we should be in a fix. I cannot say that I quite agree with the lecturer when he says that our Ordnance Department has not the knowledge sufficient to put it in a condition to issue designs. Well, I think it has the knowledge, though it is not in the position to do so;—as far as gun makers go there is very little difference after all in the designs of guns in the present day. With regard to Mr. Longridge's wire gun, on which so much faith appears to be pinned at present, if the Government has not adopted it in the twenty years that it has been before the public, neither have private firms. Therefore I do not think that makes a special point against the Government. But there is one thing to be said, that the Government in dealing with inventors is more heavily handicapped than private individuals. And you ought not to lose sight of this point; private individuals may have and often do have friends in Parliament who help them on, and press Government officials to take inventions which are not worth very much, and the Government, owing to the pressure put upon them, is not in a position to say nay. In fact a private firm's "nay" does mean nay, but it does not always happen in the case of a Government that the Government "nay" is really nay, because Parliamentary influence intervenes to alter the effect of any negative that may have been given. There is

one point on which I do not agree with the lecturer, and that is where he says that you do not want absolutely the best material for gun making. Now, in my humble opinion, you do want the very best material for gun making, and I think that is a point that cannot be insisted upon too strongly. Nor do I think that the instance he cites, in proof of what he says, viz., Sir William Palliser's converted guns, is quite a just instance—I do not say anything against them as guns—but only that they do not appear to me to be instances in proof of what he has said. Many people are convinced that you do want the best material, and one very good argument that we have heard given in favour of the best material is that it costs but very little more than inferior material, therefore why not use it, and seeing that the results of accidents with guns are so disastrous you are bound to employ the best material; and the more so that with the very best material you gain lightness, which is very essential in guns. It cannot be too much insisted on that when guns rise to such large sizes as they do now, and are so unhandy, every ton saved in weight is a considerable gain. I was glad to see that the lecturer introduced the factor of safety; that is a point upon which I have been very strong for some time. I do not see why you should not have a recognized factor of safety, in fact, I believe of late the Ordnance Committee—that much abused body—have practically adopted a factor of safety of not less than 4. With regard to the supervision. I do not think there is any difficulty in working out the necessary supervision by Government Officers located with the firms who contract to supply the rough material. Practically, the Royal Engineers have been doing this in the construction of armour-plates and with the best results; so that we have better material at a less cost than we should otherwise have obtained. Of course there is a good deal to be said about naval carriages. No doubt there is something in the point put by the lecturer as to the constitution of the Board of Admiralty as not perhaps being conducive to encourage the manufacture of naval carriages by the trade generally; but the Board of Admiralty, as the War Office, is part of the Parliamentary system, which is not very easy to be got over. However people may abuse the military officials and the heads of departments, the root of the evil is the Parliamentary system, which puts a civilian at the head of all, and for a very indefinite time, never longer, practically, than five years, perhaps not longer than two years, who knows nothing about his business, and cares less, and would very often rather go, we will say, to Cowes or Newmarket than to his particular duties. The lecturer referred to the question of Committees. Now we know that Committees are not very convenient bodies in many ways, but when I corrected Mr. Carbutt with respect to the constitution of the Ordnance Committee, it was simply that you gentlemen present who may not have known how that Committee was constituted might have its constitution fairly before you when considering the points he was urging against it, and I suppose that Committee was constituted as much in deference to civilian and public feeling as to anything else. No doubt it is true, as Mr. Carbutt said, that Mr. Barlow or Sir Frederick Bramwell would be perfectly competent to carry on the business if they gave their whole time to it. Of course, generally, a Committee is a body to be kicked by everybody—I believe that is pretty well ascertained. One thing, I think, is perfectly evident, that the lecturer has placed in a very temperate manner before us the subject of his lecture. It is a matter of considerable importance, and I most cordially and full agree with him that a great deal may be done by putting out the rough materials to contract. I cannot say that I go as far as Mr. Carbutt did in the matter. I think the lecturer's view is the right one, and I hope that what has here passed may have some effect in influencing public opinion to produce the results that he aims at.

Mr. ANDERSON: With respect to the remark made by Mr. Carbutt on the political part of the paper, if I may so call it, I do not suppose that any Minister would be so foolish as to go before the country on an electioneering stump and say that the Government were going to economize by cutting down the Army, the Navy, and the Ordnance. I intended to intimate that the tendency is to make Budgets as low as possible, although the general public does not know how the economy is arrived at. I am sure that many here will bear me out when I say that the heads of departments have to adjust their estimates to fit the sum of money which the Treasury, for other reasons than the wants of the Service, has

decided to appropriate. With regard to the Ordnance Committee, I think it is composed of very able men indeed, and I, for one, have no fault whatever to find with them; but it is not the province of a Committee to originate designs or to carry on the details of the manufacture, they must, of necessity, look to the responsible manager of the gun factories for the information which they themselves require in order to direct the manufacture. The Ordnance Committee consists of Officers from all branches of the Service, they are supposed to know what the Government requires, but neither the individual members of the Committee nor the Committee as a body can be expected to design guns; that duty must be performed by the responsible manager, who should be a permanent Officer, and whose duty it should be to submit his designs to the Committee for their approval, and he must justify his plans before those who look at the guns to be constructed from a naval or military point of view. The head of the Government establishment that Mr. Nordenfelt alluded to should be, in my opinion, the Committee whose functions I have described, and the permanent manager may very well be an Officer selected from any arm of the Service, provided that the appointment be permanent so long as he proves himself competent for the work. If we watch what goes on in various branches of the Service, when we happen to be engaged in war, we find what a large number of competent Generals and Officers of all grades come to the front. It very rarely happens that there is any failure in duty, knowledge, enterprise, or energy. Therefore I am perfectly certain that if a competent man, who has shown any aptitude for construction, were appointed to the management of a gun factory, with a proper sense of security his position would be maintained, he would probably do quite as well as a civilian who had enjoyed the advantage of a special training. What I consider so bad is the want of interest which the temporary nature of appointments give rise to. A manager who knows himself responsible for the distant future, and whose position would be affected by failure, would give a great deal more care to the work that he was required to perform than he would be likely to bestow if he knew that in a year or two he would be relegated to some out of the way place, where all his scientific knowledge and experience would prove useless. The want of permanence also greatly interferes with our experimental work, which, in addition, is carried on with fatal parsimony. At Woolwich, for example, there are beautiful instruments provided, but nobody to work them, except the Officers, who are already overburdened with the special duties connected with manufacture and proof. The fact is, there ought to be a proper permanent staff, charged with the special duty of conducting experiments, and they should be furnished liberally with the necessary means, both material and pecuniary. With regard to our ignorance of the pressure in the bores of guns. I have dwelt very fully on that subject in a lecture which I delivered in January last at the Society of Arts, and I must not detain you by enlarging on the subject now; I will just state that if you take the official drawings of our present guns, such as were exhibited here last year by Colonel Maitland, you will find lines traced on them which purport to be curves of pressure in the bore. These curves constitute what engineers call indicator diagrams, and the areas included by them represent the work done in driving out the shot and powder gases. If you take the trouble to measure one of these diagrams you will find that it does not even account for the energy of the shot, and consequently provides no pressure which can be devoted to performing the work of expelling the powder gases, of overcoming their friction, and that of the gas-checks, of the energy absorbed in the rotation of the shot, and some other matters, consequently those curves of pressure are gravely inaccurate. I believe that they have been traced from the indication of crusher-gauges; but crusher-gauges are untrustworthy. They do, it is true, give a comparative state of the pressure provided, where they are exposed for the same time, thus the gauges in the powder-chamber may fairly be compared with each other, but gauges in the muzzles are exposed to pressure for a much shorter time, and therefore their indications, though comparable with each other, would not be so with those in the base of the bore, and still less with the pressure slowly applied in the gauging apparatus. The shorter the time for which the gauge is exposed, the more erroneous the indications will be, and that, too, on the dangerous side, that is, the indications will be too low, which is probably the reason why our new guns are bursting in front of the trunnions.

It is a very difficult and intricate matter to work out the true pressures in the bore of guns, and should occupy the attention of a special staff, now, at once, so that the question may be settled before the next design for our guns is adopted, otherwise we may find ourselves again in the same predicament we are now in. It is surely cheaper and wiser to spend 1,000*l.* in getting at the facts than to spend millions in guns which have at last to be condemned because they have been designed in total ignorance of the pressures which they have to withstand. I quite agree with Sir Charles Nugent in believing that a public arsenal is necessary. I think one of the speakers misunderstood me in supposing that I advocated subsidizing private establishments. What I meant to convey was that there ought to be an arsenal in which certain tools would be provided which private manufacturers would not be willing to put down, because of their enormous cost. The number of big guns that we require is not very great, and it is not at all likely that manufacturers will expend large sums of money in putting down costly tools on the chance of getting a contract now and then. Parts of big guns would be readily furnished by manufacturers who would not require to be subsidized at all, and who are at this very moment competent to supply them. The Steel Company of Scotland for example, Vickers, Sons, and Co., of Sheffield, the Landore Siemens Works, and the North-Eastern Steel Company, and many others. I was also misunderstood with respect to what I said about the quality of the steel. Suppose, for instance, Whitworth and Company made steel of higher quality than anybody else. It would only be necessary for the Ordnance Committee to prescribe conditions which Whitworth alone can satisfy, to throw out the whole of the rest of the trade. I quite agree that the best steel ought to be had for the manufacture of guns, but at the same time you must not make specifications so strict and so exacting as to cut out the majority of competitors; such a course is unnecessary for the purpose of ensuring trustworthy guns, and it would have the effect of practically establishing a monopoly of supply which would defeat the very object sought to be attained. The last point upon which I wish to touch upon is the need for immediate action. I do not suppose that I can do any good by dwelling on the subject, because I am sure that everybody here is as fully convinced about it as I am, but it is a question of enormous importance. If we happen to lose a naval action of consequence, there would of course be a tremendous row, boundless indignation against everybody, somebody's windows would be smashed; but all this would not repair the losses sustained. If any considerable number of ships and guns were captured or destroyed it would be too late to supply the deficiency. Our enemy would not wait for us, they would not give us the two or three years necessary for building new ships and new guns. That is the danger. Now is the time; it is far too late to begin when disaster has reached us. The proper, the only time we are sure of, is the present, for setting our defences in order.

The CHAIRMAN: There is only one thing more for me to do. Before I do that I should like to make one remark. There was one point the lecturer touched upon which is almost the most important of his lecture—indeed I am not quite sure that it is not the most important, but no one has taken any notice of it, and that is that Woolwich Arsenal is in a most unsafe place, and that we ought not to trust to one arsenal. We have all the stores of the nation collected in Woolwich Arsenal, and in case of emergency it would be impossible to get them out of it in any given time. And not only that, Woolwich Arsenal is in the first line. I have been for years advocating the formation of a central arsenal in addition to Woolwich, and it cannot be too strongly insisted upon that a central arsenal is a *sine quâ non*. Gentlemen, all we have now to do is to return Mr. Anderson our thanks for his very interesting lecture.

Friday, March 20, 1885.

FIELD-MARSHAL THE RT. HON. LORD NAPIER OF MAGDALA, G.C.B., G.C.S.I., Vice-Patron, in the Chair.

THE ORGANIZATION AND EMPLOYMENT OF CAMEL CORPS IN WARFARE.

By General Sir GEORGE W. GREEN, K.C.B., &c., &c.

1. RECENT military operations in Egypt and the Soudan having again brought into prominent notice the question of the employment of camel corps for the rapid movement of detachments of troops on field service, the Council of this Institution has been good enough to request me to write and read a paper on "The Organization and Employment of Camel Corps in Warfare." I have undertaken the office with considerable diffidence, on the understanding that every allowance shall be made for errors and shortcomings in treating the subject, consequent upon the long period that has elapsed since I severed my connection with Sir Charles Napier's Scinde Camel Corps, through which I have derived all the information and experience I possess, and the almost insurmountable difficulties that cross my path in my endeavours to obtain the necessary data to enable me to master the details efficiently.

2. I left the Scinde Camel Corps in December, 1848, upwards of thirty-six years ago, and am almost entirely dependent upon my memory for any success that may attend my attempt to meet the wishes of the Council. Napier's "Administration of Scinde" has, indeed, furnished me with some useful hints, for which I am grateful.

3. I propose, in the first place, to give a rough sketch of the origin and organization of the Scinde Camel Corps, and will then venture to submit to my hearers my own ideas of the more extended uses to which a corps of the kind may be put in modern warfare in Eastern countries, where the employment of native troops, capable of undergoing excessive heat and fatigue, is limited, and where alone the camel can act, and, indeed, exist.

4. Sir Charles Napier's famous Camel Corps was raised for service on the Scinde frontier, with the view to check the frequent raids of the robber-tribes inhabiting the neighbouring hills upon the villages under British protection on the borders of the desert separating the cultivated lands of Scinde proper from the hills.

5. These marauders were always mounted on small, hardy, Belooch mares, very fleet, and capable of undergoing great fatigue and privations. The plan adopted by them was to make their start from some

watercourse at the foot of the hills (where they rested during the heat of the day) late in the afternoon, cross the desert, make their attack upon a doomed village in the middle of the night, plunder the inhabitants, murdering those who were rash enough to offer any resistance, carry off all the cattle, sheep, goats, and camels they could find, and recross the desert with their booty to their former bivouac, where they considered themselves sufficiently safe from pursuit to enable them to take a long rest before retiring to their mountain homes; their movements were so well timed and so rapid, that they were generally well out of reach of our cavalry outposts before the latter could possibly appear on the scene and save the village from being plundered.

6. On receipt of intelligence through trustworthy spies that a party intended leaving the hills on a marauding expedition, the commandant of the camel corps, Captain Robert FitzGerald,—who has been most aptly described by Sir Charles Napier as "of invincible strength, courage, and activity, and admirably suited for the sudden, rapid, and arduous duties expected from his corps,"—having full powers to act on his own responsibility, independently of any superior orders, would start with his regiment from its quarters at Larkhana in time to enable it to arrive in the vicinity of the enemy's bivouac shortly before daybreak. The camels were then left in some safe position, out of sight and hearing of the robbers, under the care of their armed attendants. The trained infantry portion of the regiment was then marched to the low hills, and placed, if possible, where they would command the line of retreat into the hills, from whence they could swoop down upon their quarry before they were sufficiently awake to discover the trap into which they had fallen. If the movement was successful, the plundered flocks were hastily abandoned by the robbers, whose first object was, of course, personal safety.

7. On one occasion, shortly after the regiment was raised, FitzGerald made a march with it of 100 miles in twenty-four hours, and carried off a criminal chief from the midst of his tribe, which so awed the other recusant Scindian chiefs that they tendered their submission, and even the hillmen became so alarmed by this rapid and unexpected movement of the camel corps that our poor villagers were for some time free from all fear of attack on the part of these remorseless plunderers and murderers.

8. On another occasion FitzGerald, hearing that a tribe was abroad on a marauding expedition, only forty remaining as a personal guard with their chief, made a march of 75 miles with the camel corps, and surprised the chief's camp in the hills. The chief fled, but was pursued, brought to bay with his son and two nephews, and captured after a short but determined resistance.

9. The Scinde Camel Corps was composed of two distinct establishments capable of acting in separate bodies, or on emergency, in concert for mutual self-defence. The first and most important of these was the Transport establishment, which consisted of between 500 and 600 thoroughly trained riding camels, each capable of carrying two armed men, one of whom was the driver, whose duty it

CAMEL CORPS.

SCINDE.

SOUDAN

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was to groom and generally to attend to his camel, with their ammunition, bedding, rations for a week or ten days, if necessary, and entrenching tools.

10. These drivers were not regularly enlisted under the Articles of War for Native Troops, but were subjected to strict discipline. They were dressed in French grey uniform, and armed with a carbine and a tulwar, or native scimitar, and were thoroughly trained in the use of the former weapon for the protection of the camels when detached from the combatant portion of the regiment.

11. On these occasions, if there was any danger of an attack from a superior force, the camels were formed into a compact hollow square facing inwards, made to sit down, and their fore legs were securely fastened to their necks to prevent them from rising and breaking the square. The armed attendants were then distributed equally between the camels, and under shelter thereof were able to keep up a continuous fire on an attacking force without exposing themselves unnecessarily. This defensive formation would prove especially effective against cavalry, horses having a natural dislike to approach camels in mass, and this antipathy would be increased by a well-directed fire from the defenders of the square.

12. Herodotus, in his account of the great Persian War, gives an instance of the dislike shown by even a large body of horses trained to war to face camels:—"When Cyrus, King of Persia, arrived with his army before the city of Sardes, he found Crœsus, King of Lydia, with his cavalry drawn up in the plain in great force. Cyrus had a wholesome dread of these horsemen, and adopting the counsel of Harpagos the Mede, he placed riders on all the camels attached to his army, and drew them up in front of his troops. When the battle began, and the horses of the Lydians smelt and saw the camels, they turned and fled, and the hopes of Crœsus perished."

13. The Infantry portion of the Scinde Camel Corps consisted of between 500 and 600 native solders (including the usual proportion of native commissioned and non-commissioned officers) with four English Officers. This body of soldiers was thoroughly trained as a light infantry regiment, and generally employed independently of the camel establishment at the end of a march of from 60 to 70 miles to scour the hills and ravines in which the robber tribes were in the habit of taking refuge when pursued. A short rest of half an hour after dismounting was, as a rule, quite sufficient to enable the men to recover the use of their legs and to render them fit for any work they might be called upon to undergo.

14. Having given a rough sketch of the organization of the original Scinde Camel Corps, I will endeavour to place before my hearers my own views on the formation of a thoroughly efficient camel corps, and the uses to which it may be put in modern warfare.

15. It must be borne in mind that the camel is extremely sensitive to cold, and would consequently be unfit for employment in any but an Eastern climate, where under ordinary careful treatment it is capable of undergoing severe fatigue following long continuous marches.

16. A corps composed of 500 camels with the same number of well-

armed native attendants under a commandant, assisted by another Officer qualified to assume supreme charge on an emergency, and a medical Officer would, in my opinion, be found most useful without being attached to a particular regiment, as in the case of the Scinde Camel Corps; and its services would be available on short notice for employment with any portion of an army in the field, for the transport of a body of European or native soldiers numbering 460 of all ranks to a distance of 60 or 70 miles in one night, with a surplus of forty camels to replace casualties, and for the carriage of any supplies that might be required for the detachment during a short absence from the base of operations.

17. A strong well-fed riding camel can with ease carry 360 pounds weight, including that of the two riders; indeed, I have known them carry over 400 pounds without being distressed. Great care must, however, be taken in thoroughly padding the saddle to prevent the animal's back being galled, as a sore back tends more than anything to ruin the working powers and *permanently to undermine* its constitution.

18. I do not think it good policy to entrust the driving of the camel to any soldier (British or native) who has not been thoroughly trained to the work. Though docile enough when carefully handled, the animal is apt to become restive and unmanageable under rough treatment.

19. The hind seat on the saddle is also much easier than the front one, and less apt to tire soldiers unaccustomed to camel riding, and this is of great consequence when they may after a long ride, or at any moment, be called upon to oppose an enemy, or to take up other work on foot.

20. Should the troops employed on this expedition succeed in establishing themselves in some well chosen position, capable of being made secure against attacks from the enemy, and of being formed into a larger camp, the camels might return to headquarters for reinforcements and supplies.

21. These rapid movements are very effective against a half disciplined enemy, and to create a panic amongst men accustomed to consider themselves safe from surprise when a distance of even 20 or 25 miles separates them from their opponents.

22. The men sent on these expeditions should be carefully selected, every attention being paid to their powers of endurance under privations, and then be given a few lessons in the art of riding a camel, for it is an art, though one easily mastered by an ordinarily intelligent man. They should be taught to sit loosely in the saddle, and thereby allow the movements of their bodies to fall in with those of the camel, thus greatly adding to their own comfort and to that of the animals they are riding. To attempt to sit tight to the saddle and to grip it with the knees, as one naturally does on horseback, produces an extra and needless strain in every muscle of the body, renders the seat less secure, and certainly does not increase the powers of endurance of either the camel or its rider.

23. The bedding of the riders folded and laid smoothly over the saddle so as to completely cover it, and secured at each corner with thin

cords, settles down into two very comfortable seats, in which after a time the men can take an occasional nap without any danger of falling off.

24. The great drawback to keeping up in times of peace a permanent camel corps complete in both branches, similar to the original one raised by Sir Charles Napier in Scinde, is the heavy expense attendant thereon. Objections will, of course, be raised on the same score to one organized on the more limited scale I have suggested.

25. The only feasible alternative in such a case would be to purchase thoroughly strong trained riding camels immediately it is known that troops would have to take the field, and as there is generally plenty of spare time on hand before the commencement of hostilities, advantage should be taken of the interval to practice the newly purchased camels and their drivers together in a few simple manœuvres, such as forming line, troops, threes, and above all the rapid formation of compact hollow squares for self-defence.

26. The price to be paid for a good riding camel fit for immediate work and purchased on an emergency would, of course, be high, and should be left entirely to the discretion of the Officers entrusted with the formation of the corps. It would be very false economy to place a firmly drawn limit upon the prices to be given, and thereby risk the loss to the Service of good camels, because the owners might insist upon demanding a higher price for them than they could obtain in ordinary times of peace.

27. Rough untrained baggage camels, accustomed to crawl along under heavy dead weights at a pace never exceeding $2\frac{1}{2}$ miles an hour, would be worse than useless as riding camels for the rapid transport of troops. In the first place, they would never fall into or endure the extra pace required of them in their new sphere of life, and, in the second place, their rough ungainly motion would utterly unfit their riders for the lightest work after a long or even an ordinary march. Those who have not tried the effect can have no idea of the torture they would undergo in such an unpleasant position. I once tried it myself when I was no novice in the art of riding and managing a camel. Having to accompany FitzGerald (who was dangerously ill, and obliged to travel in a dooley) from Tattah to Kuracchee, a distance of 65 miles, in one night, I was compelled to hire a baggage camel at the former place, and by the time we reached Kuracchee I was utterly worn out and quite unfit for anything but complete rest for the succeeding forty-eight hours.

28. When not required to act in a body portions of the corps might be employed in the conveyance of small detachments of troops for keeping open communications with distant posts, or for relieving outlying pickets beyond the reach of soldiers on foot.

29. Picked swift camels of the corps could also be most usefully employed in the Postal service of an army, and in the transmission of despatches, the self-supporting constitution of the regiment rendering it especially adapted for services where secrecy, despatch, and security are so essential to success.

30. Again, it may be employed in large or small bodies on escort

duties with the Staff of an army and for reconnoitring purposes, the great height of the position in which the riders are placed giving them increased advantages in watching the movements of an enemy.

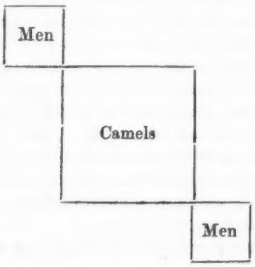
31. Further, the entire corps may be used as a means of bringing up supplies rapidly from the reserve in cases where, if dependent upon the ordinary slow baggage camel for food, the safety of an important position might be endangered.

32. On one occasion, during Sir Charles Napier's campaign against the Hill Tribes in 1844–45, when a number of the baggage camels had been carried off by the enemy from the grazing grounds, the Scinde Camel Corps proved its great utility in this respect. The troops were short of provisions, and there was great difficulty in getting up supplies from the rear. With hired baggage camels the march alone would have occupied six days and six nights, and a strong escort must have been employed to protect the convoy, covering, as it would, an enormous extent of ground. Sir Charles, thus pushed to the wall, detached FitzGerald's fighting camel corps on the duty. The military excellence and powers of endurance of this anomalous corps was then strikingly shown.

33. The men not only scoured the ravines affording shelter to the enemy always on the watch for unwary camp followers, and reached Shahpore, our base outside the hills, in one night, after a march of 50 miles over wretched stony hills and watercourses, but loaded the camels with 45,000 lbs. of flour and regained the camp on the morning of the 8th, having occupied but three days and two nights in the whole expedition.

34. There is indeed no employment upon which the services of such a corps might not be advantageously brought into play with an army in the field, provided the camels are well groomed and well fed. Each camel should have a daily ration of from 6 lbs. to 8 lbs. of soaked vetches or barley flavoured with a little salt.

35. In a diagram given in one of the London morning papers ("Morning Post") last November of the defensive formation adopted by the camel corps organized for service with the army in Egypt and the Soudan, I observe that the camels are formed into one large square, while their dismounted riders are formed into two smaller squares outside and at the opposite ends of the diagonal, to act, as it were, as flanking bastions to a larger redoubt, thus :—



This is, in my opinion, a mistake, the men in this formation being much more exposed than they would be if posted inside the large square under the protection of the camels' bodies, whence they would be able, as I have shown elsewhere, to keep up a continuous and well-directed fire in comparative safety.

36. The Arabs opposed to our army in the Soudan have on so many occasions shown themselves to be utterly fearless when attacking large bodies of determined and highly disciplined British troops armed with vastly superior weapons, that I should be afraid of their penetrating in one of their terrific rushes a square of camels unprotected by an effective fire from within, and once inside the square the fire from the flanking squares would be useless. If the riders are dispersed, as I suggest, inside the square, the chances of its being broken into are enormously reduced.

37. It is also well known to those who have seen much active service that, when fighting in exposed positions, troops (however highly disciplined and courageous they may be) are more apt to expend their ammunition freely and with comparatively little effect than they would under cover, whence they can take surer aim, and consequently inflict greater havoc in the ranks of the enemy.

38. It may not be generally known that mounted camels were employed in warfare as far back as the year 190 B.C. I have learnt this from the following summarized extract from Livy, Book XXXVII, chapter 40, giving an account of a decisive battle which was fought near Magnesia at the foot of Mount Sipylus in Lydia, between the Romans under Lucius Cornelius Scipio, brother of Scipio Africanus, and Antiochus III (the Great) King of Syria, on which occasion the former lost only 400 men, while the losses of the Syrians amounted to 50,000 infantry and 3,000 cavalry.

39. This crushing defeat of Antiochus cost him the loss of the whole of Asia Minor, an indemnity of 15,000 talents, his elephants, and ships of war. The surrender of Hannibal, who had taken refuge at the Court of Antiochus, was also demanded by Scipio, but Hannibal escaped to Crete, and thence to the King of Bithynia.

40. Antiochus posted on his left wing, in front of heterogeneous troops of cavalry, four horse chariots fitted with scythes and *camels* called *dromedaries*. On the latter were seated Arabian bowmen with narrow swords four cubits (6 or 7 feet) in length, to enable them to reach the enemy from such a height.

41. During the battle the scythe-chariots turned and fled, carrying confusion into the ranks of Antiochus' own army. The mounted camels also fled, thereby greatly adding to the panic and subsequent destruction of the Syrian Army.

42. Such it is hoped is not the result we may naturally look for from the employment of camel corps in modern warfare, and I have merely mentioned the circumstance as a proof that the animal had occasionally to take part in wars upwards of 2,000 years ago.

43. Coming to a later period, it appears from a paragraph in the "Standard" of the 13th of March, communicated by its Paris corre-

spondent, that Thebes, the capital of Upper Egypt, was garrisoned by a wing of military dromedarians in 420 A.D.

44. These troops were, it is said, founded by the Emperor Diocletian more than a century previously, and had retained, as an honorific title, his own family name of Valerius.

45. I am not aware that mounted camels are used to any extent in warfare by Eastern potentates, except as bearers of despatches; but they are frequently employed, richly caparisoned, and mounted by armed retainers, to add to the splendour of State processions of native princes and chiefs.

46. In Affghanistan they are, or were at one time, used for heavy swivel wall-pieces, which were fitted in sockets in the front part of the saddles expressly made for the purpose, and fired from the back of the camel when in a sitting position.

47. There were four of these heavy firearms of English manufacture attached to the Scinde Camel Corps, and the camels on which they were placed were posted at the four corners of the squares when formed for self-defence.

48. In addition to these pieces and their ammunition, each of these four camels carried one man only, who was thoroughly trained in the use of the weapon.

49. In conclusion, and with reference to the latter part of Para. 17 of my paper, I observe the "Morning Post's" war correspondent, writing from Wady Halfa in November last, said that about two-thirds of the camels of the camel corps were suffering from sore backs—rather a startling fact at the commencement of the campaign—and I am in consequence not very much surprised to see it mentioned in the "Standard's" Korti telegram of the 8th instant, that of all the camels that went out with the Heavy Brigade six weeks ago only four have returned with them! A camel suffering from sore back is utterly unfit for the lightest work, and ought never to be used in any way until the sore has thoroughly healed and hardened.

50. Under the peculiar circumstances attending the very hurried formation of this camel corps this heavy loss has possibly been unavoidable, but it would have been reduced to a very trifling percentage if suitable riding saddles had been available.

51. The annexed papers, giving in detail the strength of each grade in the Camel Corps raised for service in the Soudan, have only just been placed at my disposal, otherwise I might have been able to enter more fully into the subject of their formation. Half the number of combatants would, I think, have been found more useful if supplemented by a native caretaker and driver. This man would save the soldier the fatigue of driving the camel on the march, and under proper supervision see to its comfort and well-being when dismounted. Where there is only one rider to each camel, who may at any moment be called upon to act either on the offensive or defensive, independently of the poor beast that has carried him over a fatiguing march, under perhaps rough treatment, it stands to reason that the camel must suffer from neglect; a fatal error, in my opinion. After a march, the saddle should at once be slightly shifted on the

camel's back, but on no account be entirely removed until the animal is quite cool. More sore backs are caused from neglecting this precaution than from any other cause.

52. It would, in my opinion, prove a great monetary saving in the end if Government could be induced to have 500 or 600 well padded riding saddles made up after an approved pattern in India, and always kept in stock ready for immediate use, the destruction of the padding by insects being guarded against by frequent minute inspections while in store. The original outlay would be amply repaid in time of war by the great saving of life amongst the camels, and the increased comfort of those told off to ride and look after them. The heavy responsibility resting upon the shoulders of the Officers under whose care the camels are placed would also be lessened if they had good materials to work with.

53. The annexed Return of the Scinde Camel Corps, received from the Adjutant-General of the Bombay Army, is very incomplete, only the actual strength of the regiment at the time it was framed being given, and both drivers and trained infantry soldiers being classed under one heading.

54. I find I have omitted to mention that during the first Sikh War, when Lord Hardinge sent for Sir C. Napier to join his camp on the Sutledge, Sir Charles sent orders for the Scinde Camel Corps to join him at Bhawulpore, so as to form his escort from that place to Ferozepore. The time allowed for the regiment to reach its destination was very limited, and to enable it to complete the journey in the allotted time we marched completely equipped for service over sixty miles every night for five days, and then on to Ferozepore with Sir Charles at the rate of twenty-five or thirty miles every morning. On Sir Charles' return to Scinde by steamer from Bhawulpore we marched at the same rate every night to our starting-point, and I am sure the number of camels suffering from sore backs after these severe marches—the latter part of which were performed in very hot weather—did not exceed 2 per cent.

Appendix A.

SCINDE CAMEL CORPS.

Quarterly General State of the Bombay Army commanded by Lieutenant-General Sir Willoughby Cotton, G.C.B., and K.C.H.—1st April, 1849.

Corps.	Commanded by	Stations	Colonels.	Lieutenant-Colonels.	Majors.	Captains.	Lieutenants.	Cornets, 2nd Lieutenants, and Ensigns.	Staff. Paymasters.	Staff. Adjutants.	Staff. Quartermasters.	Staff. Surgeons.	Staff. Assistant Surgeons.	Staff. Veterinary Surgeons.	Subedars.	Jemedars.	Troop Quartermasters and Riding-masters.	Sergeants and Havildars.	Drummers, trumpeters, buglers, and farriers.	Rank and file.	Boys.	Horses.	Mules and camels.	Guns. 9-pounders.	Guns. 6-pounders.	Guns. Howitzers.	Sick non-commissioned officers and rank and file.	Discrepancy in number of sick in this and last Returns. Increase.	Discrepancy in number of sick in this and last Returns. Decrease.
Scinde Camel Corps	Lieut. F. F. Bruce.	Fort Fitzgerald	...	...	...	1	3	..	...	1	1	...	1	...	4	21	...	68	10	895	...	...	419	...	...	...	20	...	...
Scinde Camel Baggage Corps	Capt. T. Maughan.	Mooltan	..	...	...	1	1	2	...	...	...	...	1	...	4	18	...	23	3	971	...	...	613	...	...	...	16	...	5

Appendix B.

SOUDAN CAMEL CORPS.

Heavy Cavalry Division	In Command....	Lieut.-Colonel Talbot, 1st Life Guards.
	Adjutant and Quartermaster	Captain Lord St. Vincent, 16th Lancers.
	Surgeon	J. J. Falvey, Army Medical Department.
Light Cavalry Division	In Command....	Colonel Stanley Clarke, h.p.
	Adjutant and Quartermaster	Captain Paget, 7th Hussars.
	Surgeon	P. B. Connolly, Army Medical Department.
Infantry Division	In Command....	Lieut.-Colonel Hon. E. E. T. Boscawen, Coldstream Guards.
	Adjutant and Quartermaster	Lieutenant C. Crutchley, Scots Guards.
	Surgeon	J. Magill, Army Medical Department.

Paymaster Mackie, 1st West Surrey Regiment.

Organization.

Division.	Regiments.	Officers. Majors or Captains.	Officers. Subalterns.	Sergeants.	Trumpeters.	Corporals.	Privates.	Remarks.
Heavy Cavalry Division	1st Life Guards	Major the Hon. C. Byng	Lt. Lord Rodney	2	1	2	38	Colonel Stanley Clarke, half-pay, as senior Officer, will be in command of the corps *en route* to Egypt.
	2nd ,, ...	Captain Lord Cochrane	,, Beech	2	1	2	38	
	Royal Horse Guards ...	Major Lord A. Somerset.....	,, Lord Binning....	2	1	2	38	
	2nd Dragoon Guards...	Captain Gould	,, Hibbert.....	2	1	2	38	
	4th ,, ...	,, Darley.....	,, Law.....	2	1	2	38	
	5th ,, ...	Major Atherton	,, Gore	2	1	2	38	
	1st Dragoons.....	,, Gough	,, Burn-Murdoch..	2	1	2	38	
	2nd ,, ...	Captain Hippisley	,, Wolfe	2	1	2	38	
	5th Lancers.....	Major Carmichael	,, Costello.....	2	1	2	38	
	16th ,, ...	,, Davidson.....	,, Browne	2	1	2	38	
Light Cavalry Division	3rd Hussars.....	Major Beckett	Lt. Scott	2	1	2	38	Surgeon-Major L. Corban, Army Medical Department, is appointed Senior Medical Officer to the Corps.
	4th ,, ...	Captain Peters	,, Kincaid-Smith ...	2	1	2	38	
	7th ,, ...	Lieut.-Colonel McCalmont	,, Lawley.....	2	1	2	38	
	10th ,, ...	,, ,, Brabazon.....	,, Hon. G. Bryan...	2	1	2	38	
	11th ,, ...	Major Swaine.....	,, Harrison.....	2	1	2	38	
	15th ,, ...	Captain Holland.....	,, Coke	2	1	2	38	
	18th ,, ...	Major Gould	,, Knox.....	2	1	2	38	
	20th ,, ...	Capt. and Adjutant Courtenay.	,, Richardson	2	1	2	38	
	21st ,, ...	Major Wyndham.....	,, Fowle	2	1	2	38	
Infantry Division	1st Bn. Grenadier Gds.	Lieut.-Colonel Rowley.....	Lt. Count Gleichen..	2	1	2	38	
	2nd ,, ,, .	,, ,, Herbert.....	,, D'Aguilar	2	1	2	38	
	3rd ,, ,, .	Captain Crabbe.....	,, Woolridge Gordon	2	1	2	38	
	1st Bn. Coldstream Gds.	Lieut. V. Dawson.....	,, Hon. H. Amherst	2	1	2	38	
	2nd ,, ,, .	Lt.-Cl. Graves Sawle.....	,, D. Dawson	2	1	2	38	
	1st Bn. Scots Guards...	,, Sir W. Gordon Cumming	,, Baden Powell....	2	1	2	38	
	2nd ,, ,, ..	,, M. W. Wilson	,, A. S. Drummond.	2	1	2	38	

Grand total: Staff Officers, 11; Officers, 52: Sergeants, 52; Trumpeters, 26; Corporals, 52; Privates, 988.

N.B.—The full establishment (16th Jan., 1885) was—Heavy Camel Regiment Officers, 23: Privates, 413
,, ,, ,, Light ,, ,, 21 ,, 378
,, ,, ,, Guards ,, ,, 21 ,, 396
65 1,187

Appendix C.

CAMEL CORPS.

(SOUDAN.)

Arms, Equipment, and Clothing of Non-commissioned Officers and Men.

Arms.

Rifle and striker.
Sling.
Sword-bayonet.

Ammunition.

130 rounds, of which 60 are for practice during the voyage.

Equipment.

Bandolier.
Namaqua bucket.
Infantry waist-belt, with pouch for 20 rounds.
Waterbottle (covered with felt) with strap.
Haversack.
Surgical bandage.
Pocket filter.

Clothing, &c.

1 greatcoat or cloak.
White helmet.
Veil.
Goggles.
Puggaree.
2 pairs of boots (ankle).
1 pair of putties.
2 pairs of drawers.
1 scarlet serge frock.
1 grey serge frock.
1 blue jersey.
1 pair of trousers (blue tartan).
1 pair of pantaloons (Bedford cord) strapped with same material.
1 pair jack spurs.
2 flannel belts.
Necessaries as for field service.
Sea kit—Mediterranean scale.
Clasp knife.
Lanyard.
Tin of grease.
Housewife.
Canvas bag.
Spine protector.

Major-General Sir HENRY GREEN: Having served on the Sind Frontier at the time mentioned by Sir George Green, I can corroborate all he has stated regarding the great usefulness of the Sind Camel Corps, and I would like to illustrate in a few words one of the advantages such a corps would have over one organized such as is that now in use in the Soudan. In the latter corps, as is shown in the picture before us, there is a single soldier mounted on the hump of the camel. I will suppose that a party of these men are sent out patrolling, or for other similar duties, into the desert, and there meet with a party of the enemy's horsemen armed merely with spears, I would ask what these camelry could do—they would be unable either to fight or to run away—the men could not manage both rifle and camel, and would most assuredly come to grief. But a similar party organized on the principle of the Sind Camel Corps could either fight from their camels or dismount from them, and act on foot, and would in fact be more than equal to five times their number of horsemen. I would also call attention to the difference in the driving equipment in the two corps as shown in the illustration before us: in the Soudan Camel Corps a common headstall appears on the animal's head, and a halter is attached to a ring under his neck. Now it is quite impossible to manage a camel by this means. In all camels that I have ridden, and as is shown in the Sind Camel Corps, a piece of wood is passed through the cartilage of the camel's nose, and to each end a button is fixed, to these is attached the driving rein, and by a man who understands driving the animal can be as easily managed as a well trained horse. The comfort of the rider depends entirely on the good or bad handling of the animal by the driver. General Green mentions a famous march of the Sind Camel Corps in 1846, from Buckker on the Indus to Ferozepore, in the Punjab, a distance of nearly 400 miles, and which was accomplished in six days, or nearly at the rate of 60 miles a day. I think that such a corps would prove of very great value at the present time with Sir Gerald Graham's army. The objective of the General appears to be Berber, a distance of under 300 miles from Suakin, which is his base. I cannot help thinking that after General Graham has defeated the Arabs, such a corps as the Sind Camel Corps attached to a cavalry brigade, might, if the opportunity arose, be pushed on to his objective point. General Green has shown how complete his corps was in all marching requirements. Again, how useful such a corps would be in patrolling a railway line. The lecturer mentions that a certain number of wall-pieces were attached to his corps; these pieces, if I remember right, weighed probably from 50 to 60 lbs. each, and as General Green describes, were fixed on the pommel of the saddle, and were fired from the camel when sitting. I have lately been to see, in company with a distinguished artillery Officer, a new machine-gun invented by Mr. Maxim—that gentleman informed me that he could manufacture them of a weight not exceeding 40 to 50 lbs.; a few such guns attached to a camel corps would be of very great service. In conclusion, I would most earnestly urge upon our military authorities, if camels are made use of under any conditions with an army, the absolute necessity of placing them in charge of men who understand them. Great experience is required in both loading and driving them. The numerous caravans which pass between Central Asia and India, and which I have had the advantage of observing from having held for many years a command on our Indian frontier, rarely lose a camel, although they march for months at from 25 to 30 miles per day; while even a detachment of our Indian Army can be traced by dead and dying camels.

Admiral GORE JONES: There is one point that I do not clearly understand, with reference to putting the camels in the centre of the square. The lecturer told us he thought it would be preferable to put the camels in the square instead of having their flanks protected by the camel men. I did not understand how you are going to use the camels in the square,—were the men to be mounted and fire over the heads of the others?

Sir G. GREEN: No, the men are dismounted and the camels formed into a square facing inwards, and made to sit down. The men kneel down behind them, and inside the square, and fire between them.

Admiral GORE JONES: Could they do that?

Sir G. GREEN: Oh yes, very easily. The camel's back is round; there

is always sufficient room to fire between them, when the men are in a kneeling position between the heads of the camels when sitting down.

Colonel Sir LUMLEY GRAHAM: I think it might be interesting to the audience to hear some recollections of the famous Camel Corps formed in Egypt by Napoleon Ist, as the lecturer has not alluded to it. I was looking up some of the old accounts of that corps and it struck me that there were some very interesting points about it. The accounts will be found in Napoleon's correspondence published under the editorship of Prince Napoleon. There is an account of Napoleon's general order for the first formation of the corps, and there are frequent accounts of the action of the corps which was formed during the French occupation of Egypt, for the purpose of encountering the Bedouin tribes who made constant forays into Egypt proper, and who, owing to the quickness of their horses, always managed to escape without the French cavalry being able to catch them. For that reason Napoleon had this corps formed which he called the Corps of Dromedaries. There is a very interesting account in a well-known book called "Victoires et Conquêtes des Français." It says that Napoleon, wishing to stop the incursions of the Bedouins, whose fleet horses enabled them to escape from the French cavalry, formed a camel corps of men picked from his various regiments. The two-humped camel used for the purpose could move as rapidly as the Arab horse, and is easily broken in to any manœuvres required. These dromedaries when trained by the French satisfied all the expectations of their General. They were ridden by two men, back to back (so that they evidently had a different saddle to what was used in India). In addition to the two men, each animal had to carry the ammunition and several days' provisions. Each man was armed with a musket and a lance. When an Arab tribe succeeded in escaping from the French cavalry after one of their raids, the Camel Corps was sent after them, and as the dromedaries could easily march 24 hours on the stretch without food, they never failed to catch the thieves, whose horses could not last so long. The French used then to surround the Arabs, and the dromedaries knelt down, allowing the soldiers to dismount for the purpose of attacking the enemy. This new method of carrying on war was completely successful; the Arabs were terrified by it and were compelled to give up their brigandage and to sue for a truce which they afterwards almost always kept. Then there is a description in "Marmont's Mémoires," which is very interesting. He gives a description of some battle which took place, and says, "Later on the Corps of Dromedaries arrived which rendered most remarkable service. There were 600 men mounted on 600 camels; each soldier carried his ammunition and food for himself and his beast (a week's rations), and they were able to make several days' excursion in the desert without suffering. As soon as this corps arrived in the neighbourhood of the enemy the men dismounted and fought on foot. Never was a force more appropriate to the country where it was employed, and it rendered great service. It alone was able to keep the Arabs in check." This is a curious point, I think I never saw noticed before: "the only inconvenience of this sort of service was that it ruined the health of the soldiers, almost all those who rode the camels were attacked by lung disease." I shall be curious to hear if that has been remarked elsewhere. I was struck by the account Sir George Green gave of the saddle used in the Scinde Corps, because Sir John Ross, who commanded the Camel Corps which was raised during the Indian Mutiny, the other day when in England, was describing to me something about his Camel Corps, and in talking of the saddle he said there were two seats, the native driver sat in front and the soldier behind, but he said after a very short time the soldier changed places with the native driver because the front seat was very much more comfortable than the back one, and he learnt to drive the camel just as well as any native could.

Sir GEORGE GREEN: I think Sir Henry Green would agree with me that the back seat is far more comfortable.

Sir LUMLEY GRAHAM: Could it have been a different saddle used in the Mutiny?

Sir GEORGE GREEN: Oh, yes.

Sir LUMLEY GRAHAM: I dare say there may be some Officers present who had a personal acquaintance with the Camel Corps during the Mutiny? Then with regard to the weight carried by the camel, Sir John Ross told me the extreme weight he

found it advisable to put on a camel was 250 lbs. I do not know whether his camels were weaker animals than those of Scinde.

Sir GEORGE GREEN: A strong Arab camel is perfectly able to carry 400 lbs. at a pinch,—at any rate it can carry 360 lbs. easily, for continuous marches.

Sir LUMLEY GRAHAM: I was reading the orders given by General Skobeleff upon the formation of his Camel Corps during the campaign in Central Asia, when he took Geok Tepe, and there he put the maximum weight to be carried by the camel at 8 poods. I believe the Russian pood is 40 lbs., so that it would be 320 lbs., which is much the same weight as that carried in Scinde.

Sir G. GREEN: I have been asked if the men of the old Scinde Camel Corps suffered in any way from disease of the lungs through riding the camels. I do not think I ever served with a healthier body of men, and I have not the least recollection of anything of the kind. Certainly there were cases of lung disease, brought on by cold. I think Sir Henry Green will bear me out in that. I never heard of their lungs being affected in any way from riding the camels.

Major-General SAUNDERS ABBOTT: I think there can be no doubt about the hind seat on the camel being the easier. I have ridden both in front and behind, and I think the hinder seat is much easier than the front one.

Colonel MALCOLM GREEN: I also think the hind seat is the easiest, so much so that in India, where camels are very commonly kept for private riding, you almost invariably see the owner of the camel driving his camel from behind when he has no servant in front of him.

Sir G. GREEN: Every Officer in the Camel Corps had one or two camels for his own private riding, and we invariably rode from the hinder side; we never had a man in front at all to drive. We understood the work, and on that march up to Bhawulpore to meet Sir Charles Napier we used to have bedding piled up in front of the saddle, a good heap of it tied firmly on with thin cords, our camels being placed behind another camel of the regiment, twist our hand in these cords, and throw ourselves forward on this raised bed and go fast asleep, never waking till the camel stopped. It was *most* comfortable in the back seat, but you could not sleep at all if sitting in the front seat.

Sir LUMLEY GRAHAM: Did you ever see those guns you spoke of, wall-pieces, used by men on the camel back?

Sir G. GREEN: I have not seen them myself on service, but I have seen them frequently used in practice with the Camel Corps.

Sir LUMLEY GRAHAM: Did the camels bear the concussion?

Sir G. GREEN: Yes; they were very steady.

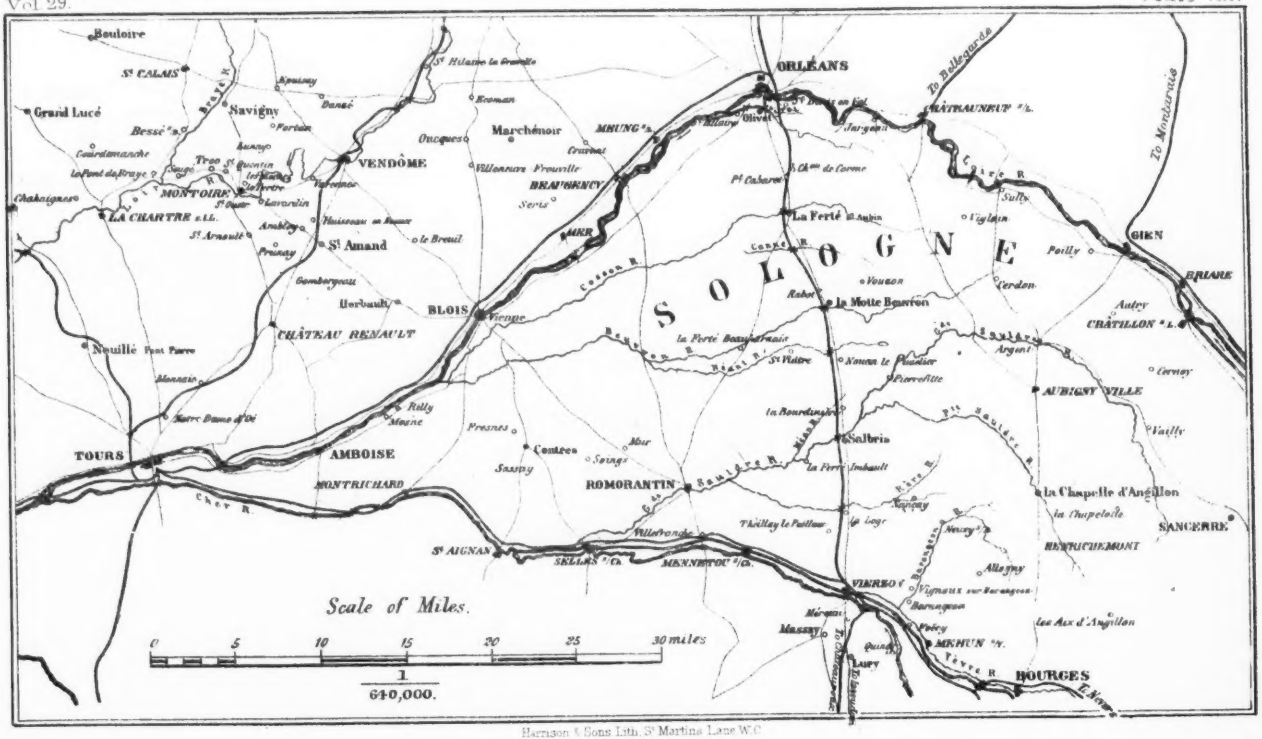
Colonel HENRY NEWDIGATE: I had the pleasure of serving with Sir John Ross in the Camel Corps, and, as far as seats go, all I can say is, as far as the comfort and discomfort went, it was SIX of one and half-a-dozen of the other. As to lung disease, I was two years with the Camel Corps, and I do not think we had any cases at all.

Colonel G. MONCRIEFF: I should like to ask what sort of weight the driver was in the Scinde Camel Corps, whether a very light man or a moderately heavy man?

Sir G. GREEN: Just as heavy as the soldier behind, taken from the same class of men, only one was enlisted as a soldier. In that drawing (on the wall) the top of the head of the man in the hind seat should not have been higher than the chin of the front man. The saddle is not made sloping down behind sufficiently. It is drawn perfectly straight along, with the man sticking up in the air; that makes him look so much higher. They are both about the same height, and naturally, when the saddle slopes down to the back, the rear man's head would not come above the chin of the front man. The front men were clothed exactly like the others, but in French grey uniform instead of in red, and they were armed with carbines and a native sword.

The CHAIRMAN: I think, gentlemen, there are two aspects of a Camel Corps. One is of such a perfect corps as that created by that great administrator Sir Charles Napier, whose words and writings have left such a great impression upon every one who served with him. There is such a complete Camel Corps as Sir George Green refers to, and there is also a temporary Camel Corps, raised at the moment, which

may be of very great service indeed. Of course, for anything like an organized march, where an attack is likely, it is of the utmost value that the driver of the camel should be expert, and that the combatant should be ready at a moment to leave his camel and form up; but as a means of transporting a body of infantry from one point to another, the camels taken from the ordinary baggage camel herds may be extremely useful, and in such cases even it might be of advantage to improvise the drivers by making one man drive and another man ride, so that you could carry two men up to the point of action together. I had to use some baggage camels in Central India, and the great evil that I found in narrow bad roads, in passing through the forests, was the difficulty of getting the men up into line. The camels tailed on to such an extreme length that when you came up to the enemy you had to stop and get your men up, and by that time the enemy got ahead of you. That is one great inconvenience of a Camel Corps in a close country. In crossing the desert that difficulty was not experienced. I had occasion, as I have mentioned, to take a body of baggage camels, and I placed the 71st Light Infantry upon them. It was very troublesome at first to the men, and they complained a little, but in a very short time they got accustomed to the use of the camel, and from not liking the duty they began to take great interest in it, and picked out the best camels with a good deal of zeal. On several occasions it was of the greatest advantage to have these camels, because we could go on steadily in pursuit. The camel can endure more than the horse, and although the enemy that we were pursuing were able very often to pick up fresh cattle as they went along, still, upon the whole, "as the strength of a chain is limited by the weakest part," they could not abandon all their people, and so we were frequently enabled to come up to them with these steady baggage camels. I had an opportunity of seeing something like a single combat between a man on a camel and a horseman. The man on the camel had a pistol and sword, the horseman had a carbine and lance, and therefore was very much better off; but the object of the camel man was to come and see who we were and what we were doing. Fortunately we were behind a range of sand hills, with just a gap in them that we could see through and we could hide the few men we had. The object of the envoy of the enemy was to come as near as possible, to see who we were. A clever young horseman of the Hyderabad Cavalry was ordered to go and bring this man in if possible. The camel man came within speaking distance; our man let him come as near as he seemed likely to come, and then said, "Whose man are you?" He replied, "I am Tantia Topee's—who are you?" So our man said, "All right, come along." The camel man was not a bit deceived by this; he came as far as he could, to see all that he could, and then, when he saw that the horseman was beginning to close upon him, he turned and went as hard as he could to his own lines. Our man followed him, and being of course the more active, he was able to get on his quarter. The flying man could not fire at him; the motion of the camel would have prevented his aiming, and our horseman fired and wounded him in the thigh; he was a very plucky follow; he did not stop, he kept his camel going; he undid a bit of cloth and tied up his thigh, going along as he did so. Then the horseman rode after him and gave him a thrust in the side with his spear; that evidently had great effect, but it did not stop him, and the camel was so swift that before the horseman could repeat his attack a dozen of the enemy's horsemen came out as hard as they could gallop, and our man was obliged to come back. Gentlemen, we are very much indebted to Sir George Green for his interesting paper. I well remember his regiment of Punjabis coming up to the capture of Lucknow, and how admirably it behaved. I am quite sure that under such a commander, with such men as we still have in the Indian Service, we may well and confidently meet any enemy that may meet us.


Bouloire
St CALAIS
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Trao
St Quentin
Les Roches
Le Perthe
Le Pont de Braye
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Chahaignes
LA CHARTRE s.L.
St Arnoult
Ambloy
Fresnay
Danzé
Epuisay
Fortan
Lunay
Marchénoir
Oucques
Villennes
Prouville
Gravot
VENDÔME
Varennes
Huisseau en Beauce
St Amand
le Breuil
Sérris
MER
BEAUGENCY
MEUNG s.L.
St Hilaire la Gravelle
Eroman
Gombergeau
Herbault
BLOIS
Vienne
CHÂTEAU RENAULT
Neuillé Pont Pierre
Monnaie
Notre Dame d'Oë
Rilly
Meune
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AMBOISE
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Loire R
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Pt Cabaret
St Ch.mo de Corme
Sully
La Ferté St Aubin
Viglain
GIEN
Conne R
Ouanon
Cerdon
Poilly
BRIARE
Autry
CHÂTILLON s/L.
SOLOGNE
Rabet
la Motte Beuvron
la Ferté Beauharnais
St Viâtre
Nouan le Fuzelier
Pierrefitte
Argent
Sauldre R
Cerney
AUBIGNY VILLE
la Bourdinière
Salbris
Vailly
Pte Sauldre R
Nanay
la Ferté Imbault
la Chapelle d'Angillon
la Chapelotte
SANCERRE
Thésay le Feuillon
le Loge
Henrichemont
Allogny
Vignaux sur Barangeon
Barangeon
VIERZO
Méreau
Massay
Lee Aix d'Angillon
Foécy
MEHUN s/N.
Yèvre R
BOURGES
E. Nère
Harrison & Sons Lith. St Martins Lane W.C.

OCCASIONAL PAPER.

THE EXPEDITION OF THE 6TH CAVALRY DIVISION THROUGH THE SOLOGNE BETWEEN DECEMBER 6TH AND 15TH, 1870.[1]

Translated by Captain TROTTER, R.A.

December 5th.—After the second battle of Orléans, the 15th Army Corps of the French Loire Army, intermingled with parts of the 16th and 17th Corps, the main bodies of which had gone down the Loire, had retreated, on December 5th, 1870, in the direction of Salbris. At the commencement of this movement complete disorder prevailed; numbers of men straggled in rear, others left their corps and hurried forward in a southerly direction. General Martin-des-Pallières formed a rear-guard of troops of the 15th Army Corps in La Ferté St. Aubin on the morning of December 5th, and arrived at La Motte Beuvron with the remaining formed bodies at noon the same day.

On the German side this same day parts of the 25th Division had advanced in a southerly direction in pursuit, and some 700 men more of the stragglers of the French Army fell into their hands. The roads were covered with arms and articles of equipment which had been thrown away. The demoralization, which the result of the battle had produced in the opponent, appeared to have been very complete. Major Count Haeseler, an Officer of the General Staff, who had been sent off to the advanced guard, reported upon this point to the Commander-in-Chief. Thereupon the latter decided, on the evening of the 5th, that in place of the 25th Division, the 18th should now advance as far as the south of Orléans. The former had found employment in another direction, having been placed under the orders of the Grand Duke of Mecklenburg with a view to accompany on the left bank of the Loire his advance against Blois.

The 18th Division was further charged to follow the defeated enemy with cavalry and infantry. With this object a brigade of the 6th Cavalry Division was to be posted, on the 6th, in the *rayon* of cantonments of the 18th Division, whilst the other brigade was to go into quarters to the north-west of Orléans.

December 6th.—From the reports and information which came in up to the 6th, the Commander-in-Chief of the 2nd German Army obtained a more accurate picture of the enemy's retreat, which had been carried out in several groups. It seemed probable from this that he would strive to unite his separated masses, in order to attempt afresh the relief of Paris.

Various symptoms tended to show that such an operation would be attempted in the direction of Montargis. The Commander-in-Chief, therefore, regarded it as important that the lines of rail running in an easterly direction on the south bank of the Loire should be interrupted, and that the circle of observation should be extended as far as possible. The Field-Marshal Prince, therefore, about noon on the 6th, having revoked the before-

[1] Translated by permission from Part III of "Kriegsgeschichtliche Einzelschriften." Herausgegeben vom Grossen Generalstabe. Abtheilung für Kriegsgeschichte. Berlin, 1884. Mittler und Sohn.

mentioned order issued on the evening of the 5th, directed the 6th Cavalry Division[1] to push its advance rapidly as far as the neighbourhood of Vierzon, and to interrupt there permanently the railway communications of Vierzon with Bourges, Châteauroux, and Tours, expressing at the same time his expectation that the work of destruction would be carried out on the 8th.

At the same time the Division was to obtain information concerning the further direction of march of those parts of the hostile army which had retreated in the first instance by La Ferté St. Aubin. During the advance, communication was to be maintained with the headquarters of the Prince by relay posts. The IXth Army Corps was directed to give up to the Division a detachment of pioneers and some infantry on wagons, and again, on the 6th, to push forward to La Ferté St. Aubin a detachment as a support to the cavalry, whilst the corps in general was not to extend its quarters beyond the line Olivet—St. Hilaire—St. Denis-en-Val.

The 6th Cavalry Division, which in the execution of the evening order of the 5th, had left, on the morning of the 6th, the quarters it had taken up about a day's march to the north of Orléans, received on the road its fresh directions, when the foremost detachments had already passed beyond Orléans. General v. Schmidt thereupon continued at once his march with the whole Division across the Loire as far as La Ferté St. Aubin, where he met with a detachment of the 18th Infantry Division under Colonel v. Houwald.[2] The cavalry and artillery of this force had followed the enemy as far as La Motte Beuvron, where the latter had again made a brief stand. This appears to have been the rear detachment of the French rear-guard, which latter force General Pallières had formed of 1 infantry regiment, 3 cavalry regiments, 1 H.A. battery, and 2 sections of a foot battery, with orders to take up a position near Nouan-le-Fuzilier.

In La Ferté St. Aubin the 6th Cavalry Division was joined by the 2nd and 3rd Companies of the Magdeburg Fusilier Regiment No. 36, under Captain Schwenck, which had belonged to Houwald's detachment, and the 3rd Field Pioneer Company of the IXth Army Corps.[3] During the night the 14th Cavalry Brigade was quartered in the Château de Corme and the neighbouring farm buildings, and the 15th with the H.A. battery north of La Ferté St. Aubin.

December 7th.—On the 7th, at 7.30 A.M., in a sharp frost, the Division commenced its advance, over very uneven ground, from La Ferté, where

[1] *Ordre de Bataille* of the 6th Cavalry Division on December 6, 1870:—

Acting Commander: Major-General von Schmidt, Commander of the 14th Cavalry Brigade.

Acting General Staff Officer: Captain von Merckel.

Adjutants: Captains v. Treskow and von Usedom.

14th Cavalry Brigade: Acting Commander: Colonel Count v. der Groeben, Commander of the Lancer Regiment No. 3.

Brandenburg Cuirassier Regiment No. 6 (Emperor Nicholas I of Russia): Lieutenant-Colonel Count zu Lynar. 1st Brandenburg Lancer Regiment (Emperor of Russia) No. 3: Acting Commander: Major v. Möllendorf. Schleswig-Holstein Lancer Regiment No. 15: Acting Commander: Major v. Westernhagen.

15th Cavalry Brigade: Acting Commander Colonel v. Alvensleben, Commander of Lancer Regiment No. 15. Brandenburg Hussar Regiment (Zieten Hussars) No. 3: Acting Commander: Major v. Haenlein. Schleswig-Holstein Hussar Regiment No. 16: Major Freiherr v. Heintze.

2nd H.A. Battery of the Brandenburg Field Artillery Regiment No. 3 (Field Marshal-General): Captain Wittstock.

[2] This detachment consisted of the Magdeburg Fusilier Regiment No. 36, Magdeburg Dragoon Regiment No. 6, the 1st Heavy, and the 1st Light Batteries of the Schleswig-Holstein Field Artillery Regiment No. 9.

[3] The latter came in in the night of 6—7th.

Houwald's detachment remained, towards Nouan-le-Fuzilier. The advanced guard was formed of the Hussar Regiment No. 16, the two Fusilier companies, one-third of the men being carried on wagons, and a division of the H.A. battery. The wagons for transporting the infantry were equally divided amongst the companies, and marched at the head of each company, the men who were not carried following close behind them. Thus the companies were kept complete in themselves, the deployment for action was facilitated, order could be maintained in the column of wagons, and the escape of the drivers on meeting with the enemy could be more easily prevented.

The advanced guard found La Motte Beuvron deserted by the enemy, but picked up again numerous stragglers. On continuing the march the 1st Squadron of the Hussar Regiment No. 16, which was leading, came upon a hostile squadron, closed with it directly in front of Nouan, attacked it and threw it back into the place. As the squadron was pursuing the enemy into the village, it came upon French infantry, which received it with a heavy fire, and endeavoured to intercept its retreat. The Hussars, however, cut their way through, and even brought back with them as prisoner a cavalry soldier. At the same time the squadron lost in this action its chief, Major v. Massonneau, as well as a number of men and horses.[1]

The enemy followed the retiring squadron with troops of all arms, and occupied a copse situated to the north of Nouan.

Meanwhile the Prussian infantry had climbed the southern bank of the Beuvron brook. General v. Schmidt ordered it to advance along the main road against the copse. When the men moved off the wagoners endeavoured to escape across country with their empty wagons, but they were soon collected again.

The whole 2nd Company, under 1st Lieutenant Scabell, was extended on both sides of the road, a division of the 3rd Company advanced on the west of the road along the railway embankment, whilst the two other divisions of this company followed in rear of the 2nd Company as support. At the same time a division of artillery with the advanced guard opened fire from an eminence east of the road,[2] the remaining guns of the battery shortly afterwards taking up the fire. The infantry halted about 400 paces from the front of the enemy's position to commence the fire fight. The opponent appeared to have deployed about three companies in first line. The Prussian skirmishers suffered not inconsiderable losses. Captain Schwenck, therefore, brought up the support at a run, fixed bayonets, and advanced the whole line simultaneously at the double with hurrahs against the enemy. The latter received the attacking companies with a hot file-fire, but when they had arrived within 150 paces of his position, he abandoned the border of the wood and retreated rapidly in the direction of Nouan. The fusiliers followed through the copse, but at the farther edge they again came under a heavy fire from the skirts of the village in front of them. The Néant bridge had to be crossed within range of the enemy's fire, and then a fresh rush had to be

[1] One officer and 3 men killed, 4 men wounded, 4 missing; 9 horses killed and 8 wounded.

[2] The advance of the artillery was attended with great difficulties. The *chaussée* was swept in the direction of its length by the fire of the enemy's infantry, and had to be evacuated with all speed. The ground on both sides of the *chaussée* consisted of potato-fields, the crops of which had been gathered, with extraordinarily deep furrows, frozen as hard as stone, and only to be crossed at a slow pace. Only a few field roads ran at right angles into the *chaussée*, and were inclosed with broad ditches, full of water. The Hussar Regiment No. 15 (except the 1st Squadron), which had been forced by infantry fire to incline off the road, came thus upon a frozen drain too broad to be jumped. An attempt had to be made to cross it in line. The ice, however, was broken by a few restive horses, and it was only with great difficulty that the further bank was gained.

undertaken. They succeeded in penetrating into the place, although the enemy still fired frequently from single scattered houses. The searching of the latter occupied much time, but a considerable number of prisoners were captured thereby.

A division of the 2nd Company had, in the meanwhile, moved off more to the left, had worked round the north-east side of the village, and had brought its fire to bear upon the railway station which lay at the southern exit of the village and partially commanded the main road. General v. Schmidt, after he had set his companies in motion against the copse, had ridden to the extreme left flank in order to make certain of the meaning of the fire which was resounding from thence. The struggle raging along the front summoned him back; at full stretch he galloped over the hard frozen, almost impassable ground, past the guns in action, through the line of skirmishers, up to one of the first houses, from which the French immediately fled. Here the corpse of Major v. Massonneau was discovered; it had a bullet wound through the head, several stabs in the breast, and bore traces of having been misused.

Whilst the infantry gained possession of the station and reorganized itself there, the division of the 2nd Company, which had been detached to the left, being brought up again, General v. Schmidt gave orders for the advance to be continued. According to the statements of the prisoners the strength of the enemy, who, meanwhile, had retired in the direction of Salbris, partly in wagons, was three battalions, several squadrons, and some guns. On account of the numerous copses and farm buildings on the road, the Fusilier companies remained at first at the head, but were frequently brought to a halt by the fire of the enemy, who repeatedly took up a position. The 3rd Company marched off at the head, the 2nd detached a division as left flanking detachment. In order to reconnoitre further towards the flanks, the 14th Cavalry Brigade, which had been left in reserve south of Nouan, detached one squadron to St. Viâtre and another to Pierrefitte. From the squadron which had advanced towards the former place the report was soon received that the patrols had found La Ferté Beauharnais occupied in force by the enemy, had been received with hot fire from the place, and had seen infantry of the line there. The other squadron reported that considerable movements of troops were taking place in the direction of Bourges.

On arriving south of the Méan brook, where the ground became more open, a squadron was again sent to the head of the advanced guard. About 4 P.M., a mile north of Salbris, it was received once more with heavy infantry fire from a farmyard, situated close to the road, surrounded with strong walls and a small park, and also from a copse projecting to the east. Shortly afterwards a French battery shelled from Salbris the cavalry which had come to a halt on the main road. Captain Schwenck, however, had already extended two divisions of the 3rd Company between the *chaussée* and the railway line, and had advanced them against the above-named farm buildings, sending off on the other hand the 3rd division as a right flanking detachment. The two divisions of the 2nd Company, which were following the 3rd Company, remained at first in close formation, but deployed afterwards east of the *chaussée* against the strips of wood in front; the divisions acting as flanking detachment accompanied the forward movement. The Horse Artillery Battery drove up on the west of the *chaussée*, and fired a few shells against the farm buildings. Darkness already began to close in.

When the skirmishers had arrived within about 150 metres (166 yards) of the farm, the fire from the strips of wood became very severe. The enemy occupied, moreover, between the farm buildings and Salbris, on both sides of the road, small copses, hedges, and sand-pits, in a wide semicircle, and appeared to be at least from two to three battalions strong. The fire of his artillery also became hotter, without, however, doing any damage, whilst the Prussian guns, on account of the closing darkness, soon ceased theirs. In the mean-

time, the leader of the 2nd Company, 1st Lieutenant Scabell, had brought up closer his division, which had been detached to the left flank, and advanced it as far as the south border of the strip of wood east of the main road. Soon the Prussian infantry also had to cease firing on account of the darkness, and of the want of ammunition. It was provisionally formed in two closed groups on the *chaussée* and the railway embankment. The left flanking division of the 2nd Company, which now also moved up to the road, made known that the enemy, whose fire, in the meantime, had also ceased, had evacuated the farm buildings in front. Captain Schwenck resolved now to assemble his companies there, to arrange the farm buildings, as well as the copses, for defence, and thus to pass the night. For the replenishing of his ammunition he obtained the carbine cartridges of the light cavalry regiments.

General v. Schmidt saw no possibility of obtaining shelter for the night for his numerous cavalry in the captured position. If he wished to obtain this, having regard to the unfavourable state of the weather, the only choice lay between attempting the capture of Salbris by a last rush, or setting off to march back to Nouan-le-Fuzilier, since between these two places only small isolated farmyards were to be met with. The attack on Salbris would lead him over the Sauldré, which could only be crossed on the road and the railway embankment, and to carry out which against a far superior enemy great difficulties would have to be faced. The numerical weakness of the infantry, which, moreover, had taken a severe part in the fighting of the day, and was greatly fatigued, gave little prospect of success, even though the attack should be supported by dismounted squadrons. General v. Schmidt, therefore, resolved upon retiring to Nouan, and decided to take back to that place also the infantry, which could not well remain without support in the captured position.

It was 7 P.M. when the march was commenced. At 10 o'clock the 15th Cavalry Brigade, the infantry, the battery, and the Pioneer Company took up quarters in Nouan. The infantry detailed three picquets to secure the exits from the village; in the interior a supporting body of dismounted hussars was posted, whilst throughout the night cavalry patrols scoured in all directions, and especially towards Salbris. The 14th Brigade sent two of its regiments to La Motte Beuvron and one to Vouzon.

The exertions of this day had been considerable. The additional march to take up quarters in rear had added much to these; it was, however, preferred in the prevailing cold to a bivouac.

In the course of the day some fifty prisoners had been brought in. According to their statements an entire French Army Corps was still at Vierzon, from which place also, the inhabitants said, large masses of troops had marched off. The Prussian losses on December 7th amounted in the infantry to 1 Officer, 14 men, and 1 horse wounded; in the cavalry to 1 Officer and 3 men killed, 4 men wounded, and 4 missing, besides 9 horses killed and 8 wounded; in the battery to 1 non-commissioned officer and 3 horses wounded. During the night the ammunition was again replenished.

December 8th.—For the 8th, General v. Schmidt ordered the 15th Cavalry Brigade, the two companies of infantry, and the battery, to be drawn up at 8 A.M. south of Nouan on the road to Salbris, and fixed the following order of march:—

Advanced guard: 1 squadron of the 3rd Hussar Regiment, which was immediately to be pushed forward and take up its proper distance.

Main body: 1 squadron of the 3rd Hussar Regiment, the battery, the 2 companies of the Fusilier Regiment No. 36, 2 squadrons of the 3rd Hussar Regiment, and the 16th Hussar Regiment. The 3rd Hussar Regiment detached from the place of assembly two patrols, one in the direction of La Ferté Beauharnais, the other to Pierrefitte.

The 14th Cavalry Brigade, and the Pioneer Company, were to stand ready at 10.30 $2\frac{1}{3}$ miles north of Salbris, and the heavy baggage of the Division was to drive up north of Nouan, under the protection of one division from each of the 15th Lancers and 16th Hussar Regiments.

In the early morning, the patrols reported that Salbris had been deserted by the enemy between 3 and 4 A.M.

The advance was carried out on December 8th in accordance with the orders. Part of the infantry was carried upon the limbers of the artillery and upon wagons; the remainder marched with the guns. At 10 o'clock, Salbris was reached. According to the statements of the inhabitants, the enemy had greatly over-estimated the strength of the Prussians, and had, therefore, avoided a renewed attack. Numerous infantry and two batteries were stated to have left the town in the early morning in the direction of Vierzon, and partly also in the direction of Neuvy-sur-Barangeon. On the far side of Salbris a covered encampment was found with fireplaces still smoking.

As it was doubtful whether it would be possible to penetrate so far as Vierzon itself, General v. Schmidt sent off a detachment of two squadrons of the 15th Lancer Regiment, with two divisions of infantry, and half of the Pioneer Company, under Captain v. Rosenberg, to Mennetou-sur-Cher, and the 2nd Squadron of the 6th Cuirassier Regiment, the 4th of the 3rd Lancer Regiment, two divisions of infantry, and the other half of the Pioneer Company, under Major v. Hessberg, to the country south-east of Vierzon, to break up there the railway lines to Tours and Bourges.

Three squadrons of the 3rd Lancer Regiment remained in Salbris. The remainder of the Division continued its advance on Vierzon along the main road.

When the advanced guard squadron had come up on the high ground of the village of Theillay-le-Pailleux,[1] it was received with shots from some straggling copses. It dismounted for action on foot and opened fire;[2] the infantry also was brought to the front, but the enemy did not stand long. As an extensive examination of the copses did not appear to be feasible, the further march of the cavalry along the main road was accompanied by infantry advancing between the latter and the railway line. The detachments were received with volley fire from a wood lying north of Vierzon. The artillery drove up, and the infantry advanced at the double against the position, which the enemy evacuated with all speed. In the wood several gun clearings for embrasures and carefully arranged shelter-trenches were found near the main road. During the further advance a few shots kept falling now and again. The march through the wood on the road covered with ice was exceedingly difficult; the horses had to be led. After the wood had been passed, on a rising ground in front of Vierzon considerable masses were perceived. It was, however, soon ascertained that these were only the inhabitants of the town who had assembled there. According to information given by them, Vierzon had already been evacuated some hours before. General v. Schmidt ordered two squadrons with unslung carbines to move through the town to the exits on the farther side, whilst the two infantry divisions were to follow at 100 paces distance. General v. Schmidt, with his Staff, had ridden into the place in front of everybody, had demanded from the Maire quarters for 10,000 infantry, and had arranged for the proper quartering of his main body, which only entered Vierzon for the most part in complete darkness. The 14th Cavalry Brigade, exclusive of the part which had remained in Salbris, or had been detached in another direction, was sheltered in Theillay-le-Pailleux.

[1] Situated 3,300 yards south of La Loge.

[2] The squadron lost in this skirmish 3 men wounded.

For the night picquets of the Zeiten Hussars occupied the exits from Vierzon, the infantry bivouacked beside large fires in the market place, and patrols scoured the neighbourhood. The houses in the town were searched for fugitives and for arms, and the destruction of the telegraph lines both in the town and at the station was taken in hand.

Of the two detached parties, the dismounted men of which were transported on wagons, that of Captain v. Rosenberg reached Mennetou-sur-Cher on the 8th unopposed, and on its appearance at that place two hostile cavalry regiments withdrew on Selles-sur-Cher. The railway embankment, which was here 5 feet high, was completely destroyed for a length of 10 feet by blowing in a culvert. Moreover, the rails were torn up for a length of 50 paces, the telegraph wires cut, and the apparatus discovered at the station carried away. After completing this task the detachment moved for the night to La Ferté Imbault, from whence on the following day it returned to the Division at Vierzon.[1]

The other detachment moving from Salbris had struck on the road by Nauçay to Neuvy-sur-Barangeon, so as from thence to reach the country south-east of Vierzon. Apparently a great part of the enemy's army had moved along this road.

The head of the advanced guard was fired upon from a thick wood in front of Neuvy, but an attack undertaken upon a projecting corner of the wood succeeded without loss. Major v. Hessberg then advanced under the protection of strong patrols through the wood, which extended for about half-an-hour's march towards Neuvy, from which place the detachment was again fired upon. The party forced its way into the place, however, without meeting with any particular resistance. A number of prisoners were captured in the wood, as also in the village. As it was already dark, and the blowing in of the bridges could not now be carried out this day, alarm quarters were taken up in Neuvy, and secured by posts of infantry and pioneers, as well as by cavalry patrols.

December 9th.—In the course of the night information was received that the Division had already occupied Vierzon. The detachment, therefore, marched off to that place on the 9th, and arrived at noon. In the afternoon the pioneers destroyed the railway bridge which crosses the Canal du Berry by blowing in an arch, and by this means the line to Bourges, as well as that to Châteauroux, was interrupted. In addition to this, all the switches at the junction of these lines were rendered useless, and thus communication between these towns was stopped. Finally the detachment destroyed also the telegraph wires, and carried off with it the apparatus. Thus, on the evening of the 9th, the Division had completed the task entrusted to it as far as regards the railway demolitions.

In the armoury at Vierzon, besides a number of unserviceable weapons, one gun and 56 Chassepôt rifles were seized, and at the station 2 tenders, 4 passenger carriages, and 70 goods wagons.

The reports which had come in concerning the enemy yielded the information that General d'Aurelle de Paladines had been in Salbris till 7 P.M., and that after he had been removed from the command, he had already passed through Vierzon in plain clothes. It was not yet known who had succeeded him.[2]

Further reports announced that the main forces of the enemy had marched off from Salbris on Bourges without touching Vierzon. No doubt also many

[1] It handed over here about 50 prisoners as well as a number of important despatches discovered in Mennetou.

[2] Gambetta had abolished the former Chief Command of the Loire Army, and had formed two armies of this, of which the Ist was placed under General Bourbaki, and the IInd under General Chanzy.

thousand men had marched through Vierzon, but these were for the most part troops without any fixed tactical connection. In reality the main body also of the 15th Army Corps (the 1st and 2nd Divisions) had already turned from Salbris to Aubigny-Ville on December 7th, from whence, on the 8th, they again took the direction of Bourges.[1]

The line of relays for establishing connection with the headquarters of Prince Frederick Charles had been organized during the advance. Eight relay posts were set up, viz., in Thiellay-le-Pailleux, Salbris, La Bourdinière, Nouan-le-Fuzilier, La Motte Beuvron, Rabot, La Ferté St. Aubin, and Petit Cabaret, at a distance from each other of from $3\frac{3}{4}$ to $7\frac{3}{4}$ miles.

General v. Schmidt arranged the security and reconnaissance duties in such a way that the infantry had to find the necessary guards and patrols in the town itself. The 16th Hussar Regiment was to guard the station and prisoners, and both Hussar regiments were to observe the roads to La Chapelle d'Angillon, Bourges, Quincy, Issondun, and Châteauroux, as well as to send forward patrols against these places. In case of alarm a point of assembly was fixed on the high ground of the town, which latter was in this case to be completely evacuated immediately. On the remaining roads the 14th Brigade, which was to move up its detachments from Thiellay and Salbris on the 10th, was to patrol. In the direction of Bourges, on the 9th, the patrols were fired upon within 6 miles of Vierzon, near Barangeon and Foëcy. Behind Lury and Massay movements of troops upon Tours were observed.

For the rest, the day and a part of the night were spent in roughing the horses' shoes, and in collecting and destroying arms.

On this day the mayor urgently requested the Division commander to quit the town again, as nobody believed in the 10,000 men spoken of by the Germans, and he could not answer for the behaviour of the inhabitants on the near approach of the advancing French troops.

During the course of this day the state of affairs on the Loire had entirely changed. The Grand Duke of Mecklenburg had met with such strong opposition that the support of the IInd Army became necessary to him. A note from Prince Frederick Charles, despatched at 12.30 noon on the 9th, which reached Vierzon on the evening of the same day, informed General v. Schmidt of this, and announced at the same time that the Grand Duke was to be supported in the first instance by the Xth Army Corps, which had been directed to draw in its advanced guard then posted at La Ferté St. Aubin, whilst the IIIrd Corps had returned to Orléans, and the IXth would advance towards Blois. The 6th Cavalry Division received orders, after having destroyed the railway lines at Vierzon, to move off on the 10th in the direction of Romorantin and Contres in such a way as to be able to take up with its right wing the connection with the IXth Army Corps, and with its left to observe the valley of the Cher.

In order to veil as far as possible the departure of the main forces of the IInd Army from the neighbourhood of Orléans, this order was supplemented in the night by instructions that the 6th Cavalry Division should leave behind it on the 10th and the 11th a brigade at Vierzon, Thiellay-le-Pailleux, and Salbris, which was in particular to patrol towards the east, and was to diffuse everywhere amongst the population the belief that the Prussian Army was advancing on both banks of the Loire up stream towards Nevers and Bourges. On the 12th this brigade was to be withdrawn in the direction of

[1] Compare Appendix I. The sketch given there of the movements of the 15th, 18th, and 20th French Army Corps between December 5th and 13th, 1870, has been compiled from French sources. It affords to the reader an interesting insight into the state of affairs then prevailing with the enemy, and at the same time makes it possible to compare this with the reports collected by the 6th Cavalry Division.

Contres. The Division was, moreover, instructed to interrupt the railway line Vierzon—Tours at several more places further to the west.

December 10th and 11th.—In consequence of this order the 14th Cavalry Brigade was directed to remain in its present position on December 10th and 11th, and only to move the Brigade Staff to Vierzon. The remainder of the Division moved on the 10th, by Villefranche, to Romorantin. Major v. Haenlein remained in the former place with two squadrons of the 3rd Hussar Regiment and the Pioneer Company, which interrupted again here the railway line from Vierzon to Tours. The head of the main body, which continued to march on, came suddenly upon irregulars in the neighbourhood of Romorantin, who, however, speedily withdrew to this place. As it appeared likely that these would offer resistance here, the battery was brought to the front, and threw a few shells into the town. Shortly afterwards the white flag appeared on the church tower, and a deputation of civilians reported to General v. Schmidt that the irregulars had been prevailed upon to quit the town, and had withdrawn in different directions, but mainly to the north. A search was made of the town, in which many weapons and articles of equipment and uniform were found, which were in part destroyed.

The same night a patrol, under Lieutenant v. Werthern of the 16th Hussar Regiment, succeeded in gaining touch with the IXth Army Corps, which was marching upon Vienne.[1]

On the 11th General v. Schmidt moved, by Mur, to Contres, from whence he detached a right flanking party of two squadrons of the 16th Hussar Regiment to Fresnes. Major v. Haenlein's detachment this day had first destroyed the railway line at Selles-sur-Cher, and had then moved up again

[1] Lieutenant v. Werthern left Romorantin with three Hussars about 3.30 P.M. and took the road to Blois, without knowing whether this town had yet been reached by the German troops or not. He had been instructed to approach the place with caution, and in doing so before all things to avoid the main road. Soon, however, he became convinced that it was not feasible to leave the road, especially as in a short time darkness would set in, and the country on both sides was intersected by watercourses. After about an hour's march, the patrol saw at a considerable distance in front of it a party of French, marching with arms and baggage. As they approached it at a gallop, the party halted and awaited the approach of the horsemen. It consisted of ten well-equipped Gardes Mobiles, with new Chassepôt rifles, who gave up their arms without offering any resistance. Directed by Lieutenant v. Werthern to repair to Romorantin and to give themselves up to the Prussian troops there, they carried out literally these instructions. Meantime, the Prussian patrol continued its ride in the direction of Blois. Soon it came again upon two men who belonged to the party just mentioned, and who were disposed of in the same way. The patrol reached Mur as darkness closed in. A short distance in front of this village it crossed a hostile party of about thirty men without being interfered with. The same thing happened several times again. The French generally sprang startled aside, possibly taking the Prussian troopers for French Gendarmes. The patrol passed through the next village, Cours Cheverny (situated 10 miles north-west of Mur) at a walk, partly to rest the horses, partly to learn something about the state of affairs in Blois, if possible. The inhabitants maintained, as it turned out, that this town was already in the hands of the Prussians. A short halt was now made. When the patrol had again started, the mayor of the place and a few inhabitants hurried after it with a white flag, asseverated that their intentions were peaceful, and begged they would make this known in the proper quarter. About 8 o'clock the patrol reached the Loire Valley, and soon afterwards came upon the heads of the IXth Army Corps, which had just come up, and was in the act of placing its outposts. At 9 P.M. Lieutenant v. Werthern reported himself at the headquarters of this Corps at Vineuil, a mile east of Vienne. He had covered a distance of more than 25 miles, through a district traversed in all directions by the enemy, and altogether this day he had marched from Vierzon almost 47 miles.

to the Division by Tassay. Only a few parties of French fugitives had been met with, of whom a number were captured.

The 15th Cavalry Brigade, with the two companies of infantry, the battery, and the pioneers remained in this position till the 16th, covered in the direction of Tours by outposts. Patrols were sent off to St. Aignan, Montrichard, Amboise, and Mosne. On the 14th one of these observed hostile infantry and cavalry in a camp 2,200 yards east of Amboise.

Conduct of the 14th Cavalry Brigade, December 10—15.—On the 15th, the 14th Cavalry Brigade rejoined its Division, and it is necessary here to follow the action of this brigade up to this day. It had maintained its former position on the 10th, as ordered. There stood in Vierzon, to which place the Brigade Staff was this day removed, 2 squadrons of the 15th Lancer Regiment, and one each of the 6th Cuirassier and 3rd Lancer Regiments; in Theillay 3 squadrons of the 6th Cuirassier and 2 of the 15th Lancer Regiments; and in Salbris 3 squadrons of the 3rd Lancer Regiment. The patrols were, moreover, sent off in the directions indicated by General v. Schmidt. The reports received on the 10th announced that the enemy, who was marching in strong masses from Gien, by La Chapelle d'Angillon, on Bourges, still held La Chapelle, and was concentrating about Méhun-sur-Yèvre. In the night of the 10—11th, a letter from Prince Frederick Charles, addressed to General v. Schmidt, was received by the 14th Cavalry Brigade,[1] in which the possibility was pointed out that the enemy's 18th and 20th Corps, supposed to be about Bourges, might assume the offensive upon Orléans. The regiments in Salbris and Vierzon were, therefore, to find out if, during the next days, any movements of the enemy's troops took place on the road from Bourges to Aubigny-Ville. The cavalry was to remain in its present position till further orders, but if pressed by the enemy, was to retire slowly upon Orléans, sending in frequent reports, for which purpose the line of relays, withdrawn on the 10th, was to be immediately re-established.[2]

The 14th Cavalry Brigade found itself in a difficult situation. Two days' march distant from the nearest of its own troops, it stood opposite an entire hostile army. Without infantry, without a regiment provided with carbines or a battery, the only effective firearms it possessed were a number of captured Chassepôt rifles. Moreover, to ride off the roads, and to attempt any pace beyond a walk, was, in consequence of the slipperiness of the ground, only exceptionally possible.

From the reports of the patrols received on the 11th and 12th, it was ascertained that no movements of troops were taking place from Bourges to Aubigny-Ville, but that the enemy's forces were rather retiring in the direction of Bourges.

As early as the 11th a somewhat greater spirit of enterprise on the part of the enemy from Bourges had been noticeable, a patrol advancing in that direction having been fired upon at Vignoux-sur-Barangeon, and having been followed to Vierzon by hostile infantry. Nevertheless, Colonel Count

[1] The bringer of this despatch, Lieutenant Freiherr v. Konig, of the Brunswick Hussar Regiment No. 17, Orderly Officer to the Commander-in-Chief of the IInd Army, had ridden off at 10 P.M. from Orléans, reached Vierzon between 5 and 6 A.M., rested his horse there two hours, and arrived again in Orléans about 4.30 on the 11th, after having ridden 100 miles in 18½ hours, including two hours' rest. Reserve Lieutenant Count Arnim, of the Brandenburg Hussar Regiment No. 3 (Zieten Hussars), also Orderly Officer of the Commander-in-Chief of the IInd Army, had ridden this road on December 8th in almost the same time. He quitted Orléans at 6 A.M., and arrived there again at 12 midnight.

[2] General v. Schmidt had ordered the line of relays to be withdrawn on marching off from Vierzon, having been informed on the 9th that in future the orders to the Division would be sent through the IXth Army Corps.

v. der Groeben, in his report of the morning of the 12th, under the impression that the enemy's masses were retreating from Aubigny-Ville on Bourges, expressed his conviction that the army posted at Bourges would undertake no offensive operations against Orléans. Although this conviction proved to be correct, yet it turned out that the brigade could not hold the post of Vierzon much longer.

In the forenoon of the 12th hostile infantry and cavalry advanced towards Vierzon, as far as Foëcy and Barangeon, to reconnoitre. It was probably to be attributed to this circumstance that the numerous factory hands in Vierzon now assumed a hostile bearing, which was intensified by the want of provisions, resulting from the necessary cutting off the town. The situation of the Cavalry Brigade was rendered still more difficult, since sufficient corn was no longer available, and the connection with the Divisional Staff and the 15th Brigade was interrupted by irregulars, and was temporarily even completely stopped. The Officers' patrols, which advanced from Vierzon early on the 13th, were fired upon at Barangeon, Foëcy, and north of Méreau. A squadron advancing against the latter place was forced back by Gardes Mobiles, and the outposts on the road to Bourges by numerous franc-tireurs, which were followed by cavalry and regular infantry. A report, moreover, having been received that hostile parties had already moved into the wood north of Vierzon, Colonel Count v. der Groeben issued orders at 12.30 noon to the squadrons in Vierzon to retire on Salbris. It was high time. Strong parties of hostile infantry and Chasseurs penetrated into the town from several directions; the inhabitants also fired upon the retiring horsemen. A squadron of the 15th Lancer Regiment, under Captain v. Ploetz, the assembling of which was rendered particularly difficult on account of the position of its quarters, found the bridge leading over the railway line already occupied by the enemy. It was obliged, therefore, to make a *détour* and to retire for some distance along the railway embankment, in doing which many horses fell, and in consequence two men were taken by the enemy.[1] In the meantime also the alarm had been raised in the quarters lying further to the rear, and the brigade was able to assemble north of the wood of Vierzon. The enemy had at first followed with several companies, and placed outposts on the north edge of this wood. Further eastward he had advanced as far as Neuvy-sur-Barangeon, but quitted this place again in the course of the afternoon. The 14th Cavalry Brigade left the 6th Cuirassier Regiment at La Loge, where the latter placed outposts, and took up quarters with the two (*sic*) Lancer Regiments in and about Salbris.

During the course of this day, it had become necessary to draw together the main forces of the IInd Army, so as to be able to employ it against Vendôme. The 6th Cavalry Division, therefore, received orders, on the 15th, to close up to the IXth Army Corps, whilst the 4th Lancer Regiment, hitherto posted about Gien, was to take over the guarding and reconnoitring of the roads leading from Orléans to Vierzon and Bourges.

The 14th Cavalry Brigade had thus fulfilled its task, specially difficult as this had been under the existing circumstances. During the whole of this time it had sent off important information of the army assembled about Bourges, and had maintained itself several days in Vierzon. In consequence of the Divisional order to close up to the 15th Brigade, *viâ* Romorantin, which Colonel Count v. der Groeben had received at the moment of marching off from Vierzon, it set off again at 8 A.M. on the 14th from Salbris. A squadron, which had been detached on Villefranche to cover the left flank, was fired upon several times on the road. On its entry into Romorantin, the brigade

[1] The loss of the 14th Cavalry Brigade on December 13, 1870, was 4 men and 9 horses killed, 4 men and 6 horses wounded, and 5 men missing.

found the population in great excitement, so that in the interior a strong guard became necessary. The horses remained saddled and harnessed till morning. The night having passed quietly, the brigade continued its march at 10.30 on the 15th, and took up quarters in Mur and Soings, where it regained connection with the 15th Brigade. On the 16th, the Division concentrated about Blois, and crossed the Loire at this place. The companies of infantry, and the Pioneer Company attached to it, were passed to the 18th Infantry Division. It continued its march on the same day as far as the neighbourhood of Séris, where it arrived at 2 A.M. after a march of more than $32\frac{3}{4}$ miles, in pouring rain, and on roads without any foundation.

Considerations.

Upon the 6th Cavalry Division, together with the duty assigned to it of advancing rapidly upon Vierzon to destroy the railway lines at that place, had necessarily devolved also the task of pursuing the enemy who had retired in that direction. This pursuit had, indeed, no immediate connection with the tactical decision, but was rather a reconnaissance of the enemy with a view to report upon his further movements, and also to inflict as much loss as possible upon him. The Division could not commence the execution of its task till December 7, after the enemy had secured two full days for carrying out his retreat. Nevertheless the dispersion of the French corps, which had retired to the south and south-east, caused by the battles about Orléans, was great out of all proportion, and was only partially stopped by December 7th. Thus when General v. Schmidt commenced his advance, the state of affairs, from this point of view, was not unfavourable. The fact that the success attained was not still greater was due in part to another set of causes.

In this case, technical and local circumstances are the main factors to be considered. In the year 1870, our cavalry was not yet equipped with a long-ranging firearm. Of the five regiments of the 6th Cavalry Division, two only carried the needle carbine Mark 57, which had no effect at ranges beyond 330 yards. Endeavours had, it is true, been made to obviate this defect by supplying part of the men with captured Chassepôt rifles; yet the cavalry at that time was without a fundamental training in dismounted action. The importance of such training for cavalry, in other respects at the very summit of its efficiency, could hardly have been brought out more clearly on any occasion than it was in the expedition described above. At the first hostile position the Cavalry Division is brought to the halt, and is obliged to wait till the infantry attached to it, some 400 rifles strong, has opened a way. This infantry then remains closest to the retiring enemy. Of the cavalry masses following it, only three squadrons can be employed during the further advance, two for reconnoitring on the flanks, the third in support of the infantry of the advanced guard. Towards evening the movement comes again to a stop, since the hostile rear-guard, which has only with difficulty veiled the disorderly retreat of the enemy, has again taken up a position. In consequence of this, the Cavalry Division has to retire for the night into quarters at a considerable distance from the enemy, and the wearied infantry has also to take over here a part of the guard duties.[1]

The Division, when it started upon its march, counted about 7,200 horses. The power of direct attack inherent in so numerous a cavalry force, fettered

[1] It is not easy after the event to say decisively which was the more correct course in this case. As a rule, however, when the choice lies between bivouacking in ice and snow, and giving up the touch with the enemy, the latter must be looked upon as the greatest evil. At any rate, General v. Schmidt in later undertakings made no scruples about bivouacking his squadrons in an equally unfavourable state of weather.

by circumstances, could nowhere be brought into play; but a Cavalry Division equipped according to present principles, which would have had at disposal about 1,200 firearms,[1] would probably have been able to do without infantry, and on the day in question might well have attained still greater successes. Nevertheless, even with the present armament of cavalry, it may appear judicious in particular cases to assign infantry detachments on wagons to Cavalry Divisions. It remains to be noted further that the 6th Cavalry Division had but a single battery at disposal. In future wars two batteries will as a rule be detailed, and it appears not impossible that a greater development of artillery fire might have given another turn to the action at Salbris.

But there was yet another circumstance which militated to prevent the 6th Cavalry Division from carrying out thoroughly its task on December 7th —this was the unfavourable state of the weather, and the impassable state of the country to be traversed. Difficulties of ground, such as those offered by the Sologne, will doubtless make it easy in the future also for small infantry detachments of the enemy to hold in check for a time the pursuing masses of cavalry. But when it is not possible to force the road at one point, this must be attempted the more decisively at another. If in the most unfavourable case, it is nowhere possible to penetrate the front, or to turn the flanks with considerable detachments, an insight into the state of affairs must at any rate be gained by single divisions, or by specially well-mounted Officers.

The success on this point on December 7 had not been complete. As already mentioned, General Martin des Pallières had reached Salbris on the 6th, with such fractions of his Corps as had not already hurried on to Vierzon, and had disentangled at this place (Salbris), and set in march on Blois the fragments of the 16th and 17th Corps, which were intermingled with his troops. He had then marched, on December 7, with the remains of two Divisions, on Aubigny-Ville; a part of the 3rd Division[2], as well as crowds of fugitives, left Vierzon on the same day, and retreated further to the south and south-east. Concerning the flank march of General Pallières from Salbris to Aubigny, carried out across its front, the Cavalry Division, during its advance on the 7th, did not receive sufficiently accurate intelligence to take any special measures. The fact that on the morning of this day, *i.e.*, at the time when General Pallières commenced his movement, it was still 18¾ miles distant from the enemy, as well as that the enemy's rear-guard occupied Nouan, and afterwards withdrew on Salbris, made this intelligible.

On December 8th the Cavalry Division reached Vierzon, which, in the meantime, had been evacuated by the enemy. Here for the first time it learned, from the statements of the inhabitants and prisoners, that the enemy had already turned off from Salbris with his main forces in an easterly direction, but it still held to the assumption that he was marching on directly to Bourges, which conclusion was not justified by the actual state of affairs.[3]

The main part of the task, which fell to the lot of the 6th Cavalry Divi-

[1] A Cavalry Division, made up of six regiments, including one Cuirassier Regiment, would, if at full strength, be able to employ 1,760 firearms for dismounted action, assuming that the Cuirassier Regiment be kept separate as a mounted reserve.

[2] A brigade of this Division had retreated on Blois, along the right bank of the Loire, directly after the Battle of Orléans.

[3] Compare Appendix I. This march of the 1st and 2nd Division of the 15th Corps from Salbris to Aubigny-Ville was brought about by an order of December 6, from Tours, according to which the 15th Corps was to unite with the 18th about Gien, and the 20th Corps was to move to Salbris in place of the 15th. Pallières probably became convinced in Aubigny of the impossibility of carrying this out, and now sought also to reach Bourges, but was obliged to take the road by Henrichemont, as the direct road *viâ* La Chapelle d'Angillon was being used by the 20th Corps.

sion, the interruption of the railway lines radiating from Vierzon, was, however, completed on December 9th. The advantages of this success would have come more directly into play if the French had actually striven to establish a further combined action between the two separated Armies of the Loire, as General Chanzy had desired, and as had appeared probable to the German Commander-in-Chief.

Yet another success had been gained by the Cavalry Division with the seizure of Vierzon. It had succeeded in capturing a not inconsiderable quantity of railway rolling stock, a circumstance which was of great benefit to the traffic on the lines of communication of the IInd Army.

After the capture of Vierzon, it next devolved upon the Cavalry Division to hold fast to this important point, from whence the observation of the enemy was to be continued.

Here a further consideration with regard to the tasks falling to the part of cavalry in time of war is opened up for discussion. To hold on to a particular point in the immediate neighbourhood of an enemy superior in numbers will always be an exceedingly difficult task for cavalry. Nevertheless, for the occupation of points so far advanced, detachments, consisting mainly of infantry, will hardly be employed with greater success. The advantages which such a force might possibly derive, of being able to defend the locality better, would be frequently outweighed by the dangers with which it will be threatened in a retreat of some extent. Considerations of this kind would, under certain circumstances, cause it to give up a post standing entirely *en l'air* sooner than an independent Cavalry Division would do. On the other hand the task of holding fast to a fixed point may easily withdraw cavalry out of its own peculiar element, movement.

From December 10th separate duties had devolved upon the two brigades of the 6th Cavalry Division. Whilst the 15th Cavalry Brigade had to turn in a westerly direction, the 14th was to continue to watch the enemy in the south-east, and to adopt measures to deceive him with regard to the movements of the IInd German Army. It would probably have succeeded better in the latter duty if it had been able to keep its main forces constantly on the move. The correspondence between the War Delegate, Freycinet, the War Minister, Gambetta, and General Bourbaki, so far as this is published,[1] makes it clear that the War Office was always well informed by means of the reports of the local, railway, and telegraph authorities concerning the German troops, as soon as the latter became stationary, even if only for the moment. General Bourbaki learned through the War Office that, in Vierzon, only a few thousand horses were quartered, whilst the appearance of single cavalry parties had already convinced the Headquarters of the Ist Loire Army that hostile armies were advancing against it. On the other hand, the special circumstances made it difficult for the 14th Cavalry Brigade to keep in motion. Without sufficient firearms, without infantry and artillery, it was deficient in the necessary resisting power for far-reaching enterprises. The squadrons in Vierzon were much weakened in consequence of their continuous exertions. At the same time great calls were made upon the strength of the brigade for the sending back of the railway material captured in Vierzon to Orléans, as well as for the re-establishment of the line of relays for the same place. Finally, the freedom of movement was also reduced by the great crowd of wagons with which it was deemed necessary that the troops should be accompanied, to secure their supply, in consideration of the exhausted state of the country and the dearth of corn.

[1] Compare Appendix II. From the despatches given here it is shown how different were the conceptions prevailing at the War Office on the one side and with the Commander-in-Chief of the Ist Loire Army on the other, with regard to the German forces confronting the latter.

If the 14th Cavalry Brigade had been able to commence its task under more favourable conditions, or had it been possible to move off into this district with a larger cavalry force, the results obtained would probably have been materially different, especially as General Bourbaki had, as it was, already resolved to give up Bourges, and to retire still further in a southerly direction, which determination he was only prevented from carrying out by the most express orders from the War Minister. But in any case a cavalry force with greater freedom of movement would have been able to supply the German Commander-in-Chief with a more accurate representation of the marches and counter-marches of the Ist Loire Army during these days than could be done by the patrols of the 14th Cavalry Brigade regularly sent forward from Vierzon, in spite of many miles' riding on the ice-covered ground.

The 15th Cavalry Brigade, working further to the west, had an easier task to fulfil. It succeeded in keeping clear the left flank of the IInd Army, as it advanced against General Chanzy, and by penetrating far into the enemy's territory, in obtaining sufficient information of the state of affairs with the opponent.

The expedition of the 6th Cavalry Division through the Sologne, instructive as it is from so many points of view, is in the last place so far worthy of notice that in this case also the cavalry showed no lack of boldness and rapid decision, as well as resolution, in the execution of that which it had once undertaken. No better proof of this can be quoted than the behaviour of the Hussars led by Major von Massonneau into Nouan, the perseverance of the squadrons which remained in Vierzon, the skilful raids of the flying columns pushed forward to great distances to carry out railway demolitions, and the daring ride of each individual patrol. Thus we see the cavalry here in very difficult country, and in exceptionally unfavourable weather, moving independently for a week and a half, and performing duties, the execution of which, with the present armament and training, will certainly be incomparably easier.

Appendix I.

Chronological Table of the Movements of the 15th, 18th, 20th French Army Corps between December 5 and 13, 1870.
(Compiled from French sources.)

Date.	15th Army Corps.	18th Army Corps.	20th Army Corps.
Dec. 5.	The 15th Corps, with the exception of the 3rd Division, was to march direct on Salbris, whilst the latter on the left bank of the Loire was to move on a level with Beaugency, and from thence by Romorantin on Salbris. On account of the partial dispersion of the Corps, however, the retreat took the following form :— The 1st Division crossed the Loire at Orléans about 1.30 A.M., and reached La Ferté St. Aubin at 4.30 ; it was followed by the Corps Artillery and the trains of the Divisions, except those of the 2nd Division, which had marched on Blois. These were followed by the 2nd Division. The main part of the 3rd Division crossed the Loire at Orléans at 5 A.M. in great disorder, and straggled back also on the road to Salbris. The smaller part of the Division, about a brigade, had remained on the right bank of the Loire, and was led in error to Blois by the Division Commander, General Peytavin. Arrived at La Ferté St. Aubin on the morrow, General des Pallières formed a rear-guard under General Rébillard of the most serviceable troops of the 2nd Division, to cover the further retreat of the mass of the Corps which was straggling back on La Motte Beuvron. D'Astugue's Cavalry Brigade was also with this. Under the protection of this rear-guard the 15th Corps, excluding those	The whole Corps retreats very early from Bellegarde to the Loire, which is crossed at Sully ; the 2nd Division, being in rear, arrives at the bridge at 10 A.M., with little semblance of order. Many men still straggling in rear on the right bank of the Loire are taken prisoners by the German cavalry. The 2nd Division forms the rear-guard, remains in bivouac close to Sully, and occupies the Loire bridge, whilst the remaining parts of the Corps march on in the direction of Gien.	In the night of December 4-5 the Corps commences its retreat on the Loire from its position near Nibelle,[1] crosses near Jargeau, covered by the 3rd Division in position on the heights of the right bank, which follows to the left bank about 8 A.M., and immediately destroys the bridge. A few stragglers of the Corps still on the right bank of the Loire are captured by the German troops. The whole Corps moves to Viglain, in the vicinity of which it bivouacs.

[1] 6¼ miles west of Bellegarde.

Date.	15th Army Corps.	18th Army Corps.	20th Army Corps.
	parts which have retired upon Blois, is united in the evening in bivouacs about La Motte Beuvron; with it are several thousand fugitives of the 16th and 17th Corps, which, on the universal dispersion at Orléans, had attached themselves mainly to the 3rd Division. In the right a general panic breaks out in the bivouac in consequence of erroneous reports of the approach of the Germans, and thousands again, this time mainly of the 2nd Division, hurry on along the main road to Vierzon. During the night the Corps Artillery also is put in march on Vierzon.		
Dec. 6.	The smaller part of the 3rd Division under General Peytavin, and the train of the 2nd Division arrive in Blois, and remain for the present separated from their Corps. The 1st, 2nd, and the remainder of the 3rd Division, accompanied by the fugitives of the 16th and 17th Corps, march off in the morning from the bivouac by La Motte Beuvron on Salbris, where they arrive about noon, whilst the rear-guard, consisting of 1 infantry regiment, 3 cavalry regiments, 1 H.A. battery, and 2 divisions of a 4-pr. battery, remains in position at Nouan-le-Fuzilier. The 15th Corps bivouacs at Salbris, south of the Sauldre, and east of the main road Orléans—Vierzon, whilst the fugitives of the 16th and 17th Corps are organized here in strong detachments, and bivouac west of this road; on this day and the day following these detachments are set in march on Blois. Upon the receipt of the report from Vierzon, that	The retreat is continued from 6 A.M. The mass of the Corps retires on the left bank of the Loire as far as opposite Gien. The 2nd Division, on the other hand, moves from Sully by Cerdon to Autry, where it bivouacs. It forms a special rear-guard, the extreme rear detachment of which does not leave Sully till it has destroyed the bridge over the Loire.	Marches from Viglain to Argent, where part of the Corps goes into quarters and part bivouacs.

Date.	15th Army Corps.	18th Army Corps.	20th Army Corps.
	several thousand fugitives of the Corps have arrived there, and created great disorder in the place, the 5th Bataillon de Marche of the Marine Infantry is sent on in advance to that place in the afternoon. It is followed in the evening by the Train of the Corps and the remainder of the 3rd Division.		
Dec. 7.	The remainder of the 3rd Division and the Train of the Corps arrive in Vierzon in the morning, where the presence of about 6,000 fugitives, including many from the 16th Corps, causes excitement and disorder. These men were conducted partly by march on Blois, partly by rail, *viâ* Tours, to the same place, whilst some of them continued to retreat on Issoudun. The 1st and 2nd Divisions of the Corps march from Salbris to Aubigny-Ville. The rear-guard is attacked by the Germans near Nouan-le-Fuzilier, and forced back on Salbris.	The 1st and 3rd Divisions move from their bivouacs on the left bank of the Loire to the neighbourhood of Gien on the right bank, and take up a position covering the town on the heights in front of it. As they are attacked here in the afternoon by German detachments they retire again to the left bank of the Loire in the night; the destruction of the bridge over the Loire is only partially successful. The 2nd Division remains the whole day in its bivouac at Autry, till it is alarmed about 5 P.M., in consequence of the attack of German troops at Gien, and at 6 o'clock it is sent on to Poilly to the support of the 1st and 3rd Divisions. It bivouacs here at 11 o'clock, but remains only till midnight.	Halts in and about Argent.
Dec. 8.	The 1st and 2nd Divisions are on the march from Aubigny-Ville, by Henrichemont, on Bourges. It is not accurately stated how far they move on this day, probably to Henrichemont. This march is covered in the direction of Salbris by the Cavalry Division moving along the road Salbris--Allogny—Bourges. Vierzon is completely evacuated. The 3rd Division, the Corps Artillery, and the Trains move from	At midnight the whole Corps is alarmed, and commences to retreat from the neighbourhood of Gien on Autry. The 2nd Division with the artillery marches at the head, then follow the 1st and 3rd Divisions. About 6 A.M. the Corps arrives at Autry, where it rests. From here it marches off again about noon, and arrives in Cernoy at 6 o'clock.	Halts in the forenoon in and about Argent. In the afternoon it marches off from here, by Aubigny-Ville on Bourges.

Date	15th Army Corps.	18th Army Corps.	20th Army Corps.
	thence to Bourges. The 5th Bataillon de Marche of the Marine Infantry marches at the rear of the column from Vierzon and along the Canal du Berry to Méhun-sur-Yèvre, where it arrives at 1 P.M. After a short rest it moves off again and reaches Bourges in the night.		
Dec. 9.	The 1st and 2nd Divisions continue their march from Henrichemont on Bourges, without, however, reaching the latter place on this day; a flanking-guard marches on the road La Chapelle d'Augillon—Bourges. The General in command remains this day in La Chapelle d'Angillon. The remaining parts of the Corps halt about Bourges.	The 2nd Division halts at Cernoy. The remainder of the Corps continues its march from Cernoy on Bourges. It cannot be accurately determined when, and on what road it is commenced, and how far it is continued. (General des Pallières states that the Corps passed Aubigny-Ville this day.)	Yesterday's march is continued as far as Bourges and the neighbourhood.
Dec. 10	The whole Corps is united at Bourges, where it bivouacs to the west and north-west of the town.	At 6 A.M. the 2nd Division marches off from Cernoy on Vailly, in order to gain the road Sancerre—Henrichemont, the Train having been sent on in the previous night. In Vailly a halt is made. Here an order is received from General Bourbaki, to the effect that the Corps is to reach Bourges on this day. In consequence the Division marches off immediately by La Chapellotte to Henrichemont, which place, however, the Division only reaches in the evening, as it crosses on the way the Cavalry Division and the heavy Train, delay and disorder being occasioned thereby. At Henrichemont a bivouac is formed, in which the greater part of the Corps appears to have been united. Only isolated fragments arrive this day in the neighbourhood of Bourges.	In and about Bourges.

Date.	15th Army Corps.	18th Army Corps.	20th Army Corps.
Dec. 11	The same position as on the 10th is maintained in and about Bourges. Gambetta arrives in Bourges.	The march of the 1st and 3rd Divisions on this day cannot be accurately determined; the 2nd Division is referred to as the rear-guard of the Corps. In the early morning the Corps marches off from Henrichemont to Les Aix d'Angillon. On this day also the 2nd Division forms the rear-guard, remains by Les Aix, and bivouacs there, whilst the remainder of the Corps reaches the neighbourhood of Bourges.	In and about Bourges.
Dec. 12 and 13.	The three Army Corps are united in Bourges, where a position is taken up to cover the town, facing the north and north-west, the 15th Army Corps being on the west of the road Bourges—Aubigny-Ville, the 18th astride the road, and the 20th Corps probably between the two former. In this position the Corps remain for the present.		

Appendix II.

Telegram No. 5269.[1] **(Extremely Urgent.)**
From Tours to La Chapelle,[2] **December 8, 1870, 10 P.M.**
Gambetta to General Bourbaki at La Chapelle or Bourges.

You told me that, to avoid a disaster, you must retreat either in the direction of Clamecy[3] to Nevers,[4] which, map in hand, appeared inexplicable, or in the direction of Nevers and Bourges. I replied, directing you to rally your three Corps, and to retire in such a way as to cover at the same time Nevers and Bourges, leaving you, for the rest, judge of the opportunity, the day, and the point where you should recross the Loire. At the same moment General des Pallières, who consulted me as to the point on which he should move, was invited to ask immediately for your orders, and till the receipt of your reply, to maintain his positions at Salbris and Vierzon. I have good reason to believe that the column before which you are retiring is far from being as important as that which Chanzy has been forcing back victoriously for the last two days with troops at least as fatigued as yours.

(Signed) LÉON GAMBETTA.

Telegram No. 5466, Bordeaux, December 10, 1870, 9 A.M.
War Delegate to Gambetta at Josnes.[5]

I have but very discouraging news from Bourbaki. He reports Vierzon to be occupied by an advanced guard. He speaks of his three Corps as a herd of men, and characterizes the march of the 15th Corps as a helter-skelter. I am very anxious that you should join him near Bourges.

(Signed) DE FREYCINET.

Telegram No. 5479, December 10, 1870, 11 A.M.
War Delegate to General Bourbaki at Bourges.
(Copy sent to M. Gambetta at Headquarters, Josnes [Loir et Cher].—Urgent.)

Your despatches contrast painfully with those of General Chanzy, who for five days has fought heroic and victorious engagements with the Army of Prince Charles, with the same Corps as had already borne all the brunt of the struggle before Orléans. What is the meaning of this dispersion of the 15th Corps, which, since its precipitate retreat, has fought no serious action? With regard to the 20th Corps I cannot understand its disorganization, as it has not yet fired a shot. It is your duty to remove all these defects by your firmness. Take every measure of salutary rigour to stop this dangerous tendency. It should be your object to vie with Chanzy, and to take a part in his glorious hardships. We are not sufficiently acquainted with the state of your troops and the forces in your neighbourhood to be able to give you at this moment a precise order, but I know that, if I were in your place, I should immediately rally my three Corps, and should punish the parties which have moved on Vierzon, and which have forced back your Army much more by acting on the imagination of your troops than by their actual numbers. I should push the enemy back vigorously beyond Salbris, and I should move a strong column in the direction of Blois. You say yourself that the enemy is seeking to outflank the *débris* of the Army of the Loire. I should

[1] The numbers given here are appended to these telegrams in the Enquête Parlementaire, from the 3rd part of which they are quoted.
[2] La Chapelle d'Angillon is meant.
[3] 37½ miles south-east of Briare.
[4] 37½ miles east of Bourges.
[5] A place half way between Marchénoir and Beaugency.

show him that these *débris* are not thus to be trifled with, and as long as I had a man available, I should not allow such a small body of men to spread terror throughout the Sologne, and to seek to join hands with Prince Charles, so as to destroy Chanzy's brave troops. This, General, is what I should do. Your knowledge of the situation, and above all your high spirit and your courage, will dictate to you the plan you should follow.

(Signed) DE FREYCINET.

Telegram No. 564, Bordeaux, December 10, 1870, 11.8 P.M.
War Delegate to General Bourbaki, at Bourges.
(Copy sent to General Chanzy, Josnes.)

I have this moment received the following despatch :—"To Bordeaux from Nevers. Divisional Inspector to Director-General. I think it my duty to communicate to you the following despatch, coming from Bléneau,[1] 'De Thou[2] to the prefect of Auxerre,[3] to the Colonel Commanding the Forces at Yonne, and to General Prémery,[4] at Nevers :

"'Briare, Ouzouer, Gien evacuated in haste. All the Prussians are coming down on Orléans, exclaiming, "Oh ! Frederick !" Everything points to a rapid concentration of the Prussians on Orleáns; inform Army of the Loire. Source certain.'"

On the other hand, despatches from our Generals announce that a column of about 20,000 men (I have reason to believe it to be not so strong), moving from Orléans to Blois on the left bank, is seeking to gain possession of Blois, and to turn Chanzy's Army.

It is thus evident that a supreme effort is being made to destroy Chanzy's Army, and according to all appearance, you have nothing before you but a screen.

Unless, then, you have proof to the contrary, and you are certain that you are in the presence of a numerous army, I desire you, in the common interest, to make a supreme effort. Leave the part of your forces which is unfit to march at Bourges, and with all the effective part march off immediately on Blois, in such a way as to cut short any movement of the Prussians on the left bank, and to force into the river the column which is already engaged there.

Inform Chanzy of your movements, so that, retiring if necessary on Blois, if he judges it to be opportune, he may be able to join hands with you there.

But if you would act, there is not a moment to be lost.

(Signed) DE FREYCINET.

Telegram No. 5364. (Urgent.) From Bourdeax to Tours and Bourges. December 11, 1870, 9.30 A.M.
War Delegate to Gambetta, at Tours and Bourges.
(Send on ; extremely urgent.)

I have received this night from General Bourbaki the following despatch, which, in view of its importance, I think it necessary to transmit to you as it stands.

"From Bourges to Bordeaux, December 10, 8 P.M. General Bourbaki to War Delegate at Bordeaux. To rally my three Corps is just what I have been trying to do by coming to Bourges. I hope this operation will be finished to-morrow. To resist an advanced guard merely to retire the next day before the main body is not a victory. If I were to march this moment on Blois,

[1] 13½ miles east of Gien.
[2] De Thou was Inspector at Bléneau.
[3] 37½ miles east of Briare.
[4] Prémery was in command at Nevers.

you would probably never see again a single one of the guns or men composing the three Corps whose movements you have appointed me to direct. Chanzy has perhaps before him a part of the Army of Prince Frederick Charles, but it is certain that I have another part in front of me, and on my left flank ; moreover, a corps of 15,000 men threaten Nevers.

"If you wish the Army to be saved, it must retreat ; if you impose on it an offensive, which, under present circumstances, it is incapable of sustaining, you expose yourself to the risk of losing it.

"In case it is your intention to take this latter course, I am so profoundly convinced of the consequences likely to result from it, that I would beg you to entrust the task to another.

"A well-directed turning movement would at present occasion us a disaster. I repeat once more, this is exactly what the enemy has been trying to effect since he pierced the centre of the Army of the Loire, and succeeded in crossing the bridges at Orléans, not with detachments, but with well organized forces. The armies of Prince Frederick Charles, the Duke of Mecklenburg, and General Werder number more than 200,000 men operating in the directions of Bourges, Blois, and Nevers. This is twice as many as we are able to withstand. I repeat that you are under a delusion both as to the number and the quality of the soldiers with which we are opposing them. By reason of our incessant marches, I have not yet been able to get a proper muster made of the men ; but the number of rank and file and of Officers of the Garde Mobile who are no longer at their duty is considerable. Those who are in the ranks are, for the most part, of little value. You had announced the despatch of a Chief Intendant ; I have not yet seen him.

"You do not reply to the proposition I submitted to retire on St. Amand,[1] and farther if necessary, in order to reconstitute the Army, if the enemy is thus obliged to leave me some respite. It is, however, my intention to do this, for our troops have only arrived here with much difficulty.

"I fear the Prussians may not allow me time, and that I may be obliged to accept battle to-morrow or the day after ; for from Orléans and Nevers Bourges can be much more quickly reached than from Gien, the two last towns not being directly connected by rail as are the first.

"General Billot will come up in line with me to-morrow. The Corps which are known to be attempting to envelope us in order to force us into the trap of Bourges number about 70,000 combatants. General Borel and all the Commanders of Army Corps are of opinion that we are strong at no point. In consequence, if the enemy gives me time, I shall commence my retreat about 4 or 5 P.M.

(Signed) "BOURBAKI, General."

In face of this despatch, which is in reply to my most urgent entreaties, it is impossible for me to give Bourbaki a formal order to march. His military reputation with the public prevents me from instigating his resignation on such a point.

You alone, as member of the Government, are in a position to push the matter farther, if you judge it to be desirable. I am confining myself to sending Bourbaki information, which tends to prove that he is in error as to the number of the forces surrounding him, and I am expressing to him my bitter regrets at his inaction.

(Signed) DE FREYCINET.

Telegram No. 57. (Extremely Urgent.)
From Bordeaux to Bourges and Josnes. December 11, 1870, 10.40 A.M.
I have received from Prémery[2] the following despatch :—

[1] 25 miles south of Bourges.
[2] 15 miles north-east of Nevers.

"From the Colonel commanding the forces of the Yonne to the War Minister at Bordeaux. Briare, Ouzouer, Gien, hurriedly evacuated by enemy. Everything points to concentrating Prussians on Orléans. This information, obtained in the Puisaye,[1] appears to be certain.

(Signed) "PALU, Colonel."

This despatch and several others to the same effect leave no doubt in my mind that you have only a screen in front of you.

I cannot give you a formal order to march, as I am neither a Minister nor a General, and, if by any chance you should sustain a check, you would lay all the responsibility on my interference. But I feel strongly that I am right in advising you to march on Blois, not with your whole forces, but with one of your Corps which is willing to march. There must be with you a General who will consent to sacrifice himself to march to the rescue of Chanzy, if only with a column of 15,000 picked men.

Interrogate your General Officers, and if one of them will accept this commission, allow him to make the endeavour. Let it not be said at a future time that a French Army has allowed another French Army to be destroyed in its neighbourhood. I am convinced that Gambetta, who is going to Bourges, will give you the same advice.

(Signed) DE FREYCINET.

Telegram No. 5863. Bordeaux, December 11, 1870, 12.35 P.M.
War Delegate to General Bourbaki, Bourges, and to General Chanzy, Josnes.

In face of your despatch of this evening (December 10, 8 o'clock P.M.), in which you declare that if you are to march on Blois we should never see one of your men or guns again, it is clear that I cannot insist on your making any offensive movement whatever.

With regard to telling you how far you should retire in order to reconstruct your army, I am not able to reply, and I must leave you to be the judge, the state in which your troops appear to be being so exceptional.

Nevertheless, before taking a definite resolution and abandoning the offensive absolutely, I beg you to consider the intelligence which I sent you this evening, from which it would appear that you have to do with much less than 70,000 men.

In any case I request you to telegraph your movements to Chanzy at Josnes.

(Signed) DE FREYCINET.

Telegram No. 5629. Bordeaux, December 11, 1870, 5.45 P.M.
To General Bourbaki, Bourges.

I send you, by way of information, as an indication, despatches which I have received :—

"From Issoudun[2] to Bordeaux and Bourges.

"The Sub-prefect of Issoudun to War Delegate at Bordeaux and General of Division at Bourges.

"Information certain. Only 2 or 3 of the enemy's horsemen have passed through the neighbourhood of Lury (Cher). To-day no Prussian has appeared. Mayor of Beuilly (Indre) informs me by the Garde-Champêtre that credible persons have told him that all the Prussians are moving off from Vierzon on the road to Tours. A score of Lancers have come to Massay (Cher). Agents of the Company of Orléans inform me that 6,000 to 7,000 of the enemy, after evacuating Vierzon, have moved in the direction of Tours."

[1] Name of a district east of Briare.
[2] 18¾ miles south-west of Bourges.

"From St. Aignan to Tours and Bordeaux.

"The *employés* at St. Aignan to the General of Division.

"The Prussians have just taken possession of the station at Selles-sur-Cher, and are said to be marching in force on St. Aignan. We have placed ourselves at the disposition of Colonel Cathelineau."

(Signed) DE FREYCINET.

Telegram, Bourges, December 12, 1870.
War Minister to Freycinet, Bordeaux.

I am allowing the movement on Vierzon to take place, but will stop it there, for the 15th, 18th, and 20th Corps are in a state of undoubted dissolution; I have seen nothing more melancholy. I am obliged to begin again at the beginning; it will take me some time, but I will not leave till I have put matters right.

The information I have received proves that Frederick's forces are for the most part directed against Chanzy. He (Chanzy) has changed his base of operations in the nick of time. He is indeed a General!

(Signed) LÉON GAMBETTA.

Telegram, Bourges, December 13, 1870.
Gambetta to General Bourbaki (Méhun[1]).

I am anxious to remind you that in his despatches General Trochu insisted that Gien should be occupied, and that above all Bourges should always be maintained. I am well aware that your troops, exhausted by forced marches in dreadful weather, must of necessity be reconstructed and reorganized. A march of three days more to get to St. Amand, will put them in a much worse condition.

You have but a few of the enemy in front of you; it would be possible to reorganize your troops on the spot, and you would thus gain both in time and in saving of fatigue, and we should, moreover, be in agreement with the instructions of General Trochu.

In spite of the difficulties of the task, I implore you not to forget the necessities which Paris imposes on us, and let me know your decision.

(Signed) LÉON GAMBETTA.

Telegram, Bourges, December 13, 1870.
Minister of the Interior and War to Delegate de Freycinet, at Bordeaux.

After having seen the 18th Corps to-day, I am a little more satisfied. A few days of rest will be sufficient to get it into condition again. I have reassured every one a little, but the 15th and 20th Corps will be more difficult to reconstruct; I beg you to expedite through the Headquarter Offices the following appointments, after having reflected on them:—

To the 15th Corps, General Borel.
„ 18th Corps, General Billot.
„ 20th Corps, General Clinchant, whom I appoint General of Division.

Bourbaki to remain for the present. . . . .

In spite of my entreaties, I cannot induce Bourbaki to retain his positions, and not to retire on St. Amand. I have not yet finally made up my mind. I am still deliberating. . . . . .

(Signed) L. GAMBETTA.

Telegram No. 5264. (Urgent.) From Bordeaux to Bourges, December 14, 1870, 1.40 A.M.
War Delegate to Gambetta, at Bourges. (Send on.)
Bordeaux, December 14, 1870, 12.45.

With regard to Bourbaki, it is indispensable that he should commence his

[1] Méhun-sur-Yèvre is meant.

movement gradually, if you will, but he must carry it a little beyond Vierzon. To-day again Chanzy strongly urges the same view. In your place I should not hesitate an instant to put Billot in Bourbaki's place. With Bourbaki you have a clear half of the Army of the Loire useless. How can you still depend on Bourbaki after all that has happened in this campaign and before in the north? It is the fetichism of the old military glories which has ruined us.

I know that if I were master I should long ago have broken through this prejudice.

(Signed) DE FREYCINET.

Telegram No. 5552. (Urgent.) From Bordeaux to Bourges, December 14, 1870, 5.55 P.M.

War Delegate to Gambetta at Bourges.

I implore you to prevent Bourbaki from quitting his position at Vierzon, and even west of Vierzon. This retreat on St. Amand would cover us with shame.

There is nothing in front of him ; the enemy has rather retired on Orleáns than moved down on Tours. Why then go on retiring for ever? It is of the first importance that our two armies should not be moved away from each other. Can you not, if needful, give him a formal order, or, better still, supersede him?

(Signed) DE FREYCINET.

Extract from the Bye-laws.

Section II.—Composition.

1. Princes of the Blood Royal; Lords Lieutenant of Counties; Governors of Colonies and Dependencies; Officers of the Army, Navy, Marines, Her Majesty's East Indian Military and Naval Forces, Militia, Yeomanry, Royal Naval Reserve, and Volunteer Corps shall be entitled to become Members, *without ballot*, on payment of the Entrance Fee and Annual Subscription.

N.B. Any Officer coming within the above definition, who may wish to become a Member of the Institution, can do so by copying one of the subjoined Forms, and inclosing it to the Secretary:—

Form for Becoming an Annual Subscriber.

_____ 18

It is my desire to become a Member of the Royal United Service Institution; and I hereby request and authorise my Agents [or Bankers], Messrs. _____, to pay my Entrance Fee (£1) and Annual Subscription (£1) now, and as it becomes due on the 1st of January in each year, to the Secretary of the Institution.

_____ Signature.

_____ Qualification for Membership.

Form for Becoming a Life Subscriber.

It is my desire to become a Life Member of the Royal United Service Institution; and I hereby authorise my Agents [or Bankers], Messrs. _____ to pay my Entrance Fee (£1) and Life Subscription (£9) to the Secretary of the Institution.

_____ Signature.

_____ Qualification for Membership.

2. Ex-Governors of Colonies and Dependencies, Retired Officers, Deputy Lieutenants of Counties, Civil Functionaries who are or have been attached to the Naval and Military Departments, the Master, Deputy Master, and Elder Brethren of the Trinity House, and Army and Navy Agents, shall be *eligible* to become Members by *Ballot*.

3. Gentlemen above the age of *fifteen*, whose names are on the list of the Commander-in-Chief for Commissions in the Army, or who are probationary for offices connected with the Naval and Military Professions, shall be *admissible*, by *Ballot*, to become Provisional Members from year to year, on payment of the Annual Subscription; and after they obtain their appointments, they may become ordinary Members on payment of the Entrance Fee.

N.B. Members admissible by Ballot must be proposed and seconded by two Members of the Institution, and their names will be submitted to the Council for election. Ballot papers may be obtained at the Institution.

Form of Bequest.

I give and bequeath unto The Royal United Service Institution, *situated in Whitehall Yard, London, the sum of* _____ *to be applied in and towards carrying on the designs of the said Institution, such Legacy to be paid out of such part of any personal Estate not specifically bequeathed as the law permits, to be appropriated by Will to Charitable Purposes.*

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THE COUNCIL of the ROYAL UNITED SERVICE INSTITUTION are very desirous of obtaining the assistance of OFFICERS of the NAVAL and MILITARY SERVICES in carrying out the different Courses of Lectures at the Institution.

The Lectures, and the Discussions which follow them (or an Abstract of them), and Descriptions of Inventions, are published in the Journal of the Institution, subject to the discretion of the Council, and illustrated, when necessary, by Diagrams.

N.B.—Officers who will favour the Institution with a Lecture, or a Course of Lectures, are requested to communicate with the Secretary on the subject as early as possible.

By order of the Council,

B. BURGESS, Captain,

Secretary.